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A checklist of the groundfreshwater Oligochaeta and Polychaeta in France: an overview

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Abstract

Publications from 1882 to 2005 are compiled in order to picture the state of the art regarding present day knowledge of the diversity of subterranean aquatic Oligochaeta and Polychaeta in continental France. From these data the following four main statements can be made.
(1) Publications reflect the way scientists have been considering the underground Oligochaeta and Polychaeta over the years and how this discipline has been evolving.
(2) The sampling effort is very unequal over the French territory, this being the result of the historical development of interest in subterranean waters.
(3) Both taxonomic diversity and species richness encountered in the subterranean biota are high. 115 species of Oligochaeta belonging to 9 families and 7 species of Polychaeta belonging to 3 families are recorded.
(4) The known species richness differs between groups of different habitat affinities. Out of the 118 taxa recorded from the literature, 24 are considered stygobionts and 39 stygophilous. Stygobiont species have very restricted areas of distribution while stygophilous species are more widespread. Those results confirm the importance of endemicity in underground invertebrates. It also seems that both stygophilous and stygobiont species are far from being all recorded in France.

Key-words: Annelida, subterranean biota, biodiversity, endemism, stygobiont species

Résumé

L'ensemble des données bibliographiques disponibles depuis 1882 jusqu'à nos jours a été recensé afin de dresser un état des lieux des connaissances actuelles sur la diversité des Oligochètes et Polychètes aquatiques souterrains en France métropolitaine. L'étude de ces données permet de dresser quatre conclusions principales :
(1) Les publications sont le reflet de la façon dont les scientifiques ont considéré les Oligochètes et Polychètes souterrains et dont cette discipline a évolué au cours du temps.
(2) L'inégalité manifeste de l'effort d'échantillonnage sur le territoire français est le résultat tangible de la manière dont s'est développé l'intérêt de la communauté scientifique pour les eaux souterraines.
(3) La diversité taxonomique ainsi que la richesse spécifiques du biotope souterrain sont élevées. 115 espèces d'Oligochètes appartenant à 9 familles et 7 espèces de Polychètes appartenant à 3 familles ont été recensées.
(4) La richesse spécifique connue est différente selon les groupes d'espèces définies par leur affinité vis à vis du milieu souterrain. Sur les 118 taxa recensés à partir de la littérature, 24 sont considérés comme stygobiontes et 39 comme stygophiles. Les aires de répartition des espèces stygobiontes sont très restreintes alors que les espèces stygophiles sont largement réparties. Ces résultats confirment l'importance de l'endémisme chez les invertébrés souterrains. Il semblerait également que beaucoup d'espèces stygobiontes ou stygophiles restent encore à découvrir en France.

Mots Clefs: Annelida, biotope souterrain, biodiversité, endémisme, espèces stygobiontes

Introduction

Studies carried out on the subterranean biota or on a particular taxonomical group with subterranean representatives have achieved remarkable progress since the foundation, in 1907, of the "Biospéologica" society by E. G. RACOVITZA and R. JEANNEL (RACOVITZA, 1907) which gave a concrete expression to the emerging interest of scientists for the subterranean fauna. Oligochaeta are one of the most neglected groups in subterranean biology and as a result data are rather scarce and most of them are found in studies done by a few researchers. As part of the subterranean aquatic biodiversity it appeared important to picture the state of the art concerning our knowledge of Oligochaeta and Polychaeta inhabiting this habitat. Syntheses on this topic have been regularly done over the years, usually at large scales such as the southwest European review by GIANI *et al.* (2001), and some worldwide reviews (WOLF, 1934; CERNOSVITOV, 1939; JUGET & DUMNICKA, 1986...). At the scale of the French continental territory the only precise synthesis can be found in the book of JEANNEL (1926).
The aim of this paper is therefore to provide an up to date record, from literature data, of Oligochaeta and Polychaeta found in subterranean freshwaters in continental France. The scale used here allows us to give more detailed information on the localisation of sites and to be more precise in the discrimination of the literature data between the original data and the following citations by various authors. The present study represents a significant amount of information complementing that on groundwater and spring communities in southern Europe investigated simultaneously over the past few years (GIANI *et al.*, 2001; SAMBUGAR *et al.*, 2005).

1. Material and methods

All data come from published literature, including theses. Publications from 1882 to 2005 concerning Oligochaeta and Polychaeta found in French aquatic subterranean biota, either natural (caves, wells, hyporheic) or artificial (mines), are recorded in this review. The aquatic Oligochaeta considered here belong to 9 families of freshwaters species. Even though Enchytraeidae are mostly terrestrial, the family is also included since a few species seem to be only found in freshwaters and many of them are amphibious. As this inventory is limited to the aquatic species of Oligochaeta, lombricids are therefore excluded with the exception of *Eiseniella tetraedra* (SAVIGNY, 1826) which is abundant in waters and *Dendrobaena rubida* (SAVIGNY, 1826) which is frequently encountered. Regarding Polychaeta, the families Aeolosomatidae, Potamodrilidae and Nerillidae are taken into account.

In the present paper, for an exhaustive purpose, we have mentioned the taxa not determined at a specific level (i.e. *Archiannelida sp.*) that appear in the litterature consulted despite the lack of taxonomic precision. All the Oligochaeta and Polychaeta taxa recorded in the literature are mentioned in the present paper independently of their affinities with the subterranean biota: the paper deals with all species collected in underground freshwaters. Assessing the species status regarding to their affinities with the underground waters environment is a quite complicated task (JUGET & DUNMICKA, 1986), since the organisms often drift along with water flows to and from the underground waters, ubiquitous species being able to maintain in their new habitat. In the present paper a species will be considered stygobiont when it has been found in underground waters only, stygophilous when found mostly in underground waters, and stygoxen when occasionally found in underground waters.

Data were collected and compiled in a database. The database was implemented on PC computers using Windows®-based software MS Access® following the pattern proposed by STOCH (2001). As far as possible coordinates of sampling sites have been recorded and displayed in the database in decimal degrees, World Geodesic System (WGS 84).

To picture Oligochaeta and Polychaeta diversity, maps were drawn using the mapping software programme MapInfo Professional® V7-8. The number of recorded species was counted in each cell of a 10 Km grid. The cell size was chosen to match with other European biodiversity maps, as Italian ones for instance (STOCH, 2001).

2. Results

1. LOCALISATION

The localisation of the sites with their coordinates, when available, is given in table 1 together with publications referring to the sampling sites. A code has been attributed to each site and this code is used within the species list allowing a quick correspondence between these two lists.

2. SPECIES LIST

The complete list of taxa with the pertaining bibliographic references for each species is given in the following pages.

Polychaeta

Aeolosomatidae

Aeolosoma gineti JUGET, 1959

Remark: BUNKE (1967) suggested that this species does not belong to the Aeolosomatidae and should be re-attributed to the Naididae within the Oligochaeta.

Stygobiont		
Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic	1f	Miribel canal, (site n°7 in GIBERT *et al.*, 1977), Niévroz, Ain (SEYED-REIHANI *et al.*, 1982).
Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Cave	91	«La Balme» cave (05/02/1959), La Balme-les-Grottes, Isère (JUGET, 1959 and referred to by GINET, 1961).

Aeolosoma niveum LEYDIG, 1865

Stygoxen		
Cave	91	«La Balme» cave (05/02/1959), La Balme-les-Grottes, Isère (JUGET, 1959 and referred to by GINET, 1961).

Aeolosoma tenebrarum VEJDOVSKY, 1884

Stygophilous		
Artificial	150	Emmerin's drinking water reservoir, Lille, Nord (MONIEZ, 1888 and referred to by COGNETTI 1904, JEANNEL, 1926 and CERNOSVITOV, 1939).

Aeolosoma cf *litorale* BUNKE, 1967

Stygophilous		
Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).

Aeolosoma cf *psammophilum* BUNKE, 1967

Stygophilous		
Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).

Aeolosoma spp.

Hyporheic	1d	Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Underground water	2b	«Lône du Grand Gravier», depth >1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Rheomorpha neizvestnovae (LASTOCHKIN, 1935)

Stygophilous
Hyporheic 15 Lachein creek near Alas, Alas, Ariège (ROUTE *et al.*, 2004).

Potamodrilidae

Potamodrilus fluviatilis (LASTOCHKIN, 1935)

Stygophilous
Hyporheic 1d Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984 and referred to by JUGET & DUMNICKA, 1986, DOLE-OLIVIER *et al.* 1994.).
Hyporheic 1f Miribel canal, (site n°7 in GIBERT *et al.*, 1977), Niévroz, Ain (SEYED-REIHANI *et al.*, 1982)
Underground water 6a River Rhône alluvial floodplain upstream of Lyon (underground water and hyporheic), Ain (JUGET, 1980 and referred to by JUGET & DUMNICKA, 1986, DOLE-OLIVIER *et al.* 1994.).
Underground water 6c Rhône River, Ain (GIBERT *et al.*, 1977 and referred to by JUGET & DUMNICKA, 1986, DOLE-OLIVIER *et al.* 1994.).
Hyporheic 130 La Plaine River, 3 km downstream of Bionville, Bionville, Meurthe-et-Moselle (JOUIN, 1973 and referred to by GIBERT *et al.*, 1977).

Nerillidae

Troglochaetus beranecki DELACHAUX, 1921

Stygobiont
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Underground water 2a «Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (REYGROBELLET & DOLE, 1982).
Hyporheic 3 «Lône du Plateron», Balan, Ain (MARMONIER *et al.*, 1992).
Hyporheic 4 «Lône de la Chaume», Balan, Ain (MARMONIER *et al.*, 2000).
Groundwater in sediments 37 Quaternary alluvium, suburbs South and East of Strasbourg. Illkirch's Norton tubes pumping, Illkirch-Graffenstaden, Bas-Rhin (HERTZOG, 1932).
Groundwater in sediments 39 Strasbourg, loess des Terrasses, Strasbourg, Bas-Rhin (HERTZOG, 1932).
Groundwater in sediments 41 Quaternary alluvium, suburbs South and East of Strasbourg. Illkirch's Norton tubes pumping, Strasbourg, Bas-Rhin (HERTZOG, 1932).
Hyporheic 68 Drôme River, «Réserve Naturelle des Ramières du Val de Drôme», Eurre, Drôme (PITZALIS & JUBERTHIE, 1995).
Hyporheic 78 Underground flow of the Rahin River, downstream of the bridge near by of the «Maison Forestière», Plancher-les-Mines, Haute-Saône (JOUIN, 1973).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (REYGROBELLET & DOLE, 1982).
Hyporheic 132 Underground flow of the Plaine River, near Bionville, Bionville, Meurthe-et-Moselle (JOUIN, 1973).
Hyporheic 133 Underground flow of the Plaine River, 8 km downstream of Bionville, Raon-les-Leau, Meurthe-et-Moselle (JOUIN, 1973).
Hyporheic 148 La Sarre-Blanche River right bank, site n°2, Türkestein avenue, Turquestein-Blancrupt, Moselle (PICARD, 1962).
Hyporheic 176 Plaine River right bank, 3 km en aval de Bionville, site n°5, Allarmont, Vosges (PICARD, 1962).
Hyporheic 179 Garonne River basin (JUBERTHIE & GINET, 1994).

Archiannelida sp.

Cave 162 En Gorner cave, Villefranche-de-Conflent, Pyrénées-Orientales (BERTRAND, 1974). It might be a *Troglochaetus sp.*

Oligochaeta

Tubificidae

Tubificinae

Aulodrilus limnobius BRETSCHER, 1899

Stygoxen
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Aulodrilus pluriseta (PIGUET, 1906)

Stygoxen
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Haber turquini (JUGET & LAFONT, 1979)

Stygobiont
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic 1c Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984 and referred to by DOLE-OLIVIER *et al.* 1994).
Underground water 2a «Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Underground water 2b «Lône du Grand Gravier», depth >1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).
Hyporheic 6a Rhône River alluvial floodplain upstream of Lyon (underground water and hyporheic), Ain (JUGET & DUMNICKA, 1986 and referred to by DOLE-OLIVIER *et al.*, 1994).
Cave 7 Cave «Puits de Rappe», Neuville-sur-Ain, Ain (JUGET & LAFONT, 1979).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).
Underground water 13 Southern Jura, Ain (CASTELLARINI *et al.*, 2005).
Wells 95 Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Haber sp.

Wells 95 Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Ilyodrilus templetoni (SOUTHERN, 1909)

Stygoxen
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Krenedrilus sergei GIANI, ERSÉUS & MARTINEZ-ANSEMIL, 1990

Stygobiont
Cave 34 Dragonnières cave, near Costes-Gozon village, surroundings of Saint-Affrique (02/10/1983), Saint-Affrique, Aveyron (GIANI *et al.*, 1990 and referred to by GIANI *et al.*, 2001).

Limnodrilus hoffmeisteri CLAPARÈDE, 1862

Stygoxen
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic 1d Miribel canal, depth <1meter (site n°1 in Juget, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Hyporheic 89 «Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1984).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Spirosperma velutinus (GRUBE, 1879)

Peloscolex velutinus (GRUBE, 1879)
Embolocephalus velutinus (GRUBE, 1879)
Stygophilous
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT ET AL., 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983 as *Spirosperma velutinus*).
Hyporheic 1d Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Spring 31 Coupiaguet fountain, near Villefranche de Panat, 800m a.s.l., Ayssènes, Aveyron (GIANI, 1976 and referred to by SAMBUGAR *et al.*, 2005).
Well 40b Well Norton « Casino «, la Musau, Rhine River riparian forest, 1km away from the Rhine River in Strasbourg (04/09/1937 and 27-28/08/1937), Strasbourg, Bas-Rhin (MOSZINSKY, 1938 and referred to by TÉTRY, 1938 and CERNOSVITOV, 1939).
Spring 61 Mont d'Or spring, feeding Jougne, surroundings of Pontarlier, Jougne, Doubs (VANDEL, 1920a).
Spring 62 Springs in the surroundings of Pontarlier : Chateleu, Pontarlier, Doubs (VANDEL, 1920a and referred to by SAMBUGAR *et al.*, 2005).

Potamothrix heuscheri (BRETSCHER, 1900)

Stygoxen
Hyporheic 89 «Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET, 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1984).

Potamothrix moldaviensis VEJDOVSKY & MRÁZEK, 1903

Stygoxen
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in Dole, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Psammoryctides barbatus (GRUBE, 1861)

Stygoxen
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Spirosperma ferox EISEN, 1879

Stygoxen
Underground water 2a «Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Tubifex tubifex (MÜLLER, 1774)

Stygoxen
Wells 95 Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Tubifex ignotus (STOLC, 1886)

Stygoxen
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Rhyacodrilinae

Rhyacodrilus amphigenus JUGET, 1987

Rhyacodrilus sp. in JUGET (1980)
Stygobiont
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT et al., 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic 1c Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Hyporheic 1d Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984 and referred to by JUGET & DUMNICKA 1986, DOLE-OLIVIER *et al.* 1994).
Hyporheic 1e Miribel canal, (site n°2 in JUGET, 1987), Niévroz, Ain (JUGET, 1987).
Underground water 2a «Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Underground water 2c «Lône du Grand Gravier», depth <1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).
Underground water 5 Rhône alluvial floodplain (site n°4 in JUGET, 1987) Upstream of Jons, Balan, Ain (JUGET, 1987).
Hyporheic 6b Bou-Rouch pumping in the Rhône River alluvial floodplain, dowstream of confluence with the Ain River, Ain (JUGET, 1980 and referred to by JUGET & DUMNICKA 1986, DOLE-OLIVIER *et al.*, 1994).
Cave 29 Cave «Aven de la Cuisinière», Calcomier (22/03/ 1987), Vailhourles, Aveyron (GIANI *et al.*, 2001).
Hyporheic 89 «Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET, 1984, site n°3 in

		JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1987).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Rhyacodrilus balmensis JUGET, 1959

Stygobiont		
Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic	1c	Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984 and referred to by JUGET, 1987).
Hyporheic	1d	Miribel canal, depth<1meter, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET,1980, 1984 and referred to by JUGET, 1987).
Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Underground water	2b	«Lône du Grand Gravier», depth >1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984 and referred to by JUGET, 1987).
Underground water	2c	«Lône du Grand Gravier», depth <1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984 and referred to by JUGET, 1987).
Underground water	5	Rhône alluvial floodplain (site n°4 in JUGET, 1987) Upstream of Jons, Balan, Ain (JUGET, 1987).
Cave	7	Cave «Puits de Rappe», Neuville-sur-Ain, Ain (JUGET, 1980, 1984 and referred to by JUGET & DUMNICKA, 1986, JUGET, 1987, DOLE-OLIVIER *et al.*, 1994).
Karstic spring	8	Pissoir, karstic spring, Torcieu, Ain (JUGET, 1980, 1984).
Hyporheic	89	«Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1987).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).
Cave	91	«La Balme» cave (05/02/1959), La Balme-les-Grottes, Isère (JUGET, 1959 and referred to by GINET, 1961).
Underground water	13	Southern Jura, Ain (CASTELLARINI *et al.*, 2005).

Rhyacodrilus carsticus KOSEL, 1980

Stygophilous		
Hyporheic	30b	Lenne brook, Riou-Mort River tributary, Lot River basin (00/07/1977), Aubin, Aveyron (GIANI & LAFONT, 1981 and referred to by JUGET & DUMNICKA, 1986, JUGET, 1987).
Hyporheic	44	Dordogne River in Argentat (04/07/79), Argentat, Corrèze (GIANI & LAFONT, 1981 and referred to by JUGET & DUMNICKA 1986, JUGET, 1987).
Hyporheic	45	Dordogne River, downstream of Bort-les-Orgues (21/06/78), Bort-les- Orgues, Corrèze (GIANI & LAFONT, 1981 and referred to by JUGET & DUMNICKA, 1986, JUGET, 1987).

Rhyacodrilus coccineus (VEJDOVSKY, 1875)

Stygophilous		
Spring	32	Spring of Cayssac, Aveyron River basin, upstream of Rodez, La Loubière, Aveyron (GIANI, 1984 and referred to by JUGET, 1987 and SAMBUGAR *et al.*, 2005).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Rhyacodrilus falciformis BRETSCHER, 1901

Stygophilous		
Karstic spring	58	Karstic spring of Hyevre-Paroisse upstream of Baume-les-Dames, Baume- les-Dames, Doubs (LAFONT, 1989).
Spring	60	Spring near Montpetot hamlet, Pontarlier, Doubs (VANDEL, 1920a).
Hyporheic	89	«Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET, 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1984 and referred to by JUGET, 1987).
Hyporheic	89	«Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1987).
Wells	95	Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Rhyacodrilus lindbergi HRABE, 1963

Stygobiont		
Cave	74	Bedousse cave (20/05/1983), *Leg.* P. Leclerc, Aujac, Gard (GIANI *et al.*, 2001).
Cave	75	Seyne cave = Trois Ours cave (03/03/1985), *Leg.* P. Leclerc, Seynes, Gard (GIANI *et al.*, 2001).

Rhyacodrilus subterraneus HRABE, 1963

Stygobiont		
Spring	67	Spring of Cusancin, Cusance, Doubs (LAFONT, 1989).
Wells	95	Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Phallodrilinae

Abyssidrilus cuspis (ERSÉUS & DUMNICKA, 1988)

Phallodrilus cuspis Erséus & Dumnicka, 1988

Stygobiont		
Cave	29	Cave «Aven de la Cuisinière», Calcomier (22/03/1987), Vailhourles, Aveyron (SAMBUGAR *et al.*, 1999 and referred to by GIANI *et al.*, 2001).

Aktedrilus monospermathecus KNÖLLNER, 1935

Stygophilous		
Brackish underground water	95	Beach of Contis-Plage, upstream, where the canal opens up onto the beach, 150m in straight line from the sea (07/10/1953), Saint-Julien-en- Born, Landes (DELAMARE-DEBOUTTEVILLE *et al.*, 1954).
Brackish underground water	165	Beach of Canet-Plage, Canet-en-Roussillon, Pyrénées-Orientales (DELAMARE-DEBOUTTEVILLE *et al.*, 1954).

Gianius aquaedulcis (HRABE, 1960)

Phallodrilus aquaedulcis Hrabe, 1960

Stygophilous		
Cave	26a	Labouiche cave, Vernajoul, 5 km North-East of Foix (17/05/1985), Baulou, Ariège (RODRIGUEZ & GIANI, 1989 and referred to by SAMBUGAR *et al.*, 1999, GIANI *et al.*, 2001).

Gianius cavealis JUGET & CREUZÉ DES CHÂTELIERS, 2001

Stygobiont		
Cave	10	Le Trou des Voleurs cave, near Poncin (5°23'26"E; 46°05'01"N), Southern Jura (17/06/1999), Poncin, Ain (JUGET & CREUZÉ DES CHÂTELIERS, 2001).

Underground water 13 Southern Jura, Ain (CASTELLARINI *et al.*, 2005).

Gianius labouichensis (RODRIGUEZ & GIANI, 1989)

Phallodrilus labouichensis RODRIGUEZ & GIANI, 1989
Stygobiont
Cave 26a Labouiche cave, Vernajoul, 5 km North-East of Foix (17/05/1985), Baulou, Ariège (RODRIGUEZ & GIANI, 1989 and referred to by SAMBUGAR *et al.*, 1999).

Gianius riparius (GIANI & MARTINEZ-ANSEMIL, 1981)

Stygophilous
Hyporheic 49 Downstream of the confluence between the Dordogne River and the Vézère River, site n°20, Alles-sur-Dordogne, Dordogne (LAFONT, 1989).
Hyporheic 50b Dordogne River, upstream of Siorac, Siorac-en-Périgord, Dordogne (LAFONT, 1989).
Hyporheic 52b Dordogne River, downstream of Cenac bridge, Cénac-et-Saint-Julien, Dordogne (LAFONT, 1989).
Hyporheic 54 Dordogne River, Cazoulès gravel bank, downstream of Souilac, site n°14, Cazoulès, Dordogne (LAFONT, 1982).
Underground water 167 Ile du Grand Gravier, Rhône (LAFONT & DURBEC, 1990).

Spiridion phreaticola (JUGET, 1987)

Rhizodriloides phreaticola JUGET, 1987
Rhyacodrilus sp. in JUGET (1980) and JUGET (1984)
Phallodrilus minutus HRABE (LAFONT, 1982)
Spiridion sp. (LAFONT, 1982)
Rhyacodrilus phreaticola nomen nudum; JUGET, 1984; JUGET & DUMNICKA, 1986
Stygobiont
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic 1c Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984 and referred to by JUGET & DUMNICKA 1986, JUGET, 1987).
Hyporheic 1d Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984 and referred to by JUGET & DUMNICKA 1986, JUGET, 1987).
Hyporheic 1e Miribel canal, (site n°2 in JUGET, 1987), Niévroz, Ain (JUGET, 1987 and referred to by DOLE-OLIVIER *et al.*, 1994).
Underground water 2a «Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Underground water 2b «Lône du Grand Gravier», depth >1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984 and referred to by JUGET & DUMNICKA, 1986, JUGET, 1987).
Underground water 2c «Lône du Grand Gravier», depth <1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984 and referred to by JUGET & DUMNICKA, 1986, JUGET, 1987).
Underground water 5 Rhône alluvial floodplain (site n°4 in JUGET, 1987) Upstream of Jons, Balan, Ain (JUGET, 1987).
Hyporheic 15 Lachein creek near Alas, Alas, Ariège (ROUTE *et al.*, 2004).
Cave 26a Labouiche cave, Vernajoul, 5 km North-East of Foix (17/05/1985), Baulou, Ariège (ERSÉUS *et al.*, 1992).
Hyporheic 50a Dordogne River (June 1978), site n°16, upstream of Siorac, upstream of the confluence with the Vézère River; *Spiridion* in LAFONT (1982), Siorac-en-Périgord, Dordogne (LAFONT, 1982 and referred to by SAMBUGAR *et al.*, 1999, GIANI *et al.*, 2001).
Hyporheic 52a Dordogne River (June 1978), site n°15, Cenac bridge, upstream of the confluence with the Céou River; *Spiridion* in LAFONT (1982), Cénac-et-Saint-Julien, Dordogne (LAFONT, 1982 and referred to BY SAMBUGAR *et al.*, 1999, GIANI *et al.*, 2001).
Hyporheic 55a Dordogne River (June 1978), site n°14, Cazoulès gravel banks, downstream of Souilac; Spiridion in LAFONT (1982), Cazoulès, Dordogne (LAFONT, 1982 and referred to by SAMBUGAR *et al.*, 1999, GIANI *et al.*, 2001).
Hyporheic 83 Karaman-Chappuis, Neste d'Aure River banks, Aure valley, 476 m a.s.l. (August 1983), Anères, Hautes-Pyrénées (ERSÉUS *et al.*, 1992).
Hyporheic 89 «Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1987).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).
Wells 95 Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Naididae

Amphichaeta leydigii TAUBER, 1879

Stygoxen
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Chaetogaster diaphanus (GRUITHUISEN, 1828)

Stygoxen
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).

Chaetogaster diastrophus (GRUITHUISEN, 1828)

Stygoxen
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic 1c Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Hyporheic 1d Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT ET AL., 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in Juget, 1987), Anthon, Isère (DOLE, 1983).

Chaetogaster langi BRETSCHER, 1896

Stygoxen
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Chaetogaster setosus SVETLOV, 1925

Stygophilous
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic 1c Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).

Dero digitata (MÜLLER, 1773)

Stygoxen
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Dero obtusa D'UDEKEM, 1855

Stygoxen
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Dero sp.

Wells 95 Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Nais alpina SPERBER, 1948

Stygoxen
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).

Nais barbata MÜLLER, 1773

Stygoxen
Spring 32 Spring of Cayssac, Aveyron River basin, upstream of Rodez, La Loubière, Aveyron (GIANI, 1984 and referred to by SAMBUGAR *et al.*, 2005).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Nais bretscheri MICHAELSEN, 1899

Stygoxen
Spring 32 Spring of Cayssac, Aveyron River basin, upstream of Rodez, La Loubière, Aveyron (GIANI, 1984 and referred to by SAMBUGAR *et al.*, 2005).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Nais christinae KASPRZAK, 1973

Stygoxen
Hyporheic 6c Rhône River, Ain (LAFONT & DURBEC, 1990 and referred to by GIANI *et al.*, 2001).
Cave 51 Azerat cave, *Leg.* B. Lebreton, Azerat, Dordogne (GIANI *et al.*, 2001).

Nais communis PIGUET, 1906

Ubiquituous
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic 1c Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Hyporheic 1d Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Underground water 2a «Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Spring 32 Spring of Cayssac, Aveyron River basin, upstream of Rodez, La Loubière, Aveyron(GIANI,, 1984 and referred to by SAMBUGAR *et al.*, 2005).
Hyporheic 89 «Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET, 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1984).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).
Wells 95 Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Nais elinguis MÜLLER, 1773

Stygoxen
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983),Niévroz, Ain (DOLE, 1983).
Hyporheic 1c Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Hyporheic 1d Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Cave 26a Labouiche cave, Vernajoul, 5 km North-East of Foix (17/05/1985), Baulou, Ariège (RODRIGUEZ & GIANI, 1989).
Spring 32 Spring of Cayssac, Aveyron River basin, upstream of Rodez, La Loubière, Aveyron (GIANI, 1984 and referred to by SAMBUGAR *et al.*, 2005).
Well 87 Well in Terrieu, hydrographic basin of the Lez exsurgence, Saint-Mathieu- de-Tréviers, Hérault (MALARD *et al.*, 1994).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).
Well 149 Well of Philippe-le-Bon square in Lille, Lille, Nord (MONIEZ, 1888 and referred to by CERNOSVITOV, 1939).

Nais pardalis PIGUET, 1906

Stygoxen
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Spring 32 Spring of Cayssac, Aveyron River basin, upstream of Rodez, La Loubière, Aveyron (GIANI, 1984 and referred to by SAMBUGAR *et al.*, 2005).
Hyporheic 89 «Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET, 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1984).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Nais pseudobtusa PIGUET, 1906

Stygoxen
Spring 173 Val d'Ajol fountain (22-23/08/1933), Le Val-d'Ajol, Vosges (MOSZINSKY, 1938 and referred to by TÉTRY, 1938, CERNOSVITOV, 1939 and SAMBUGAR *et al.*, 2005).

Nais simplex PIGUET, 1906

Stygoxen
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT ET AL 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Ophidonais serpentina (MÜLLER, 1773)

Stygoxen		
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET,1987), Anthon, Isère (DOLE, 1983).

Paranais sp.

Cave	11	Corveissat cave, southern Jura (17/02/1959), Corveissiat, Ain (GINET, 1961).

Piguetiella blanci (PIGUET, 1906)

Stygoxen		
Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Pristina aequiseta BOURNE, 1891

- f. *aequiseta*		
Stygophilous		
Hyporheic	6b	Bou-Rouch pumping in the Rhône River alluvial floodplain, dowstream of it's confluence with the Ain River, Ain (JUGET, 1980).
- f. *foreli*		
Stygophilous		
Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic	1d	Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Underground water	2c	«Lône du Grand Gravier», depth <1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).
Hyporheic	89	«Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGEt, 1984).

Pristina idrensis SPERBER, 1948

Stygophilous		
Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983),Niévroz, Ain (DOLE, 1983).
Hyporheic	1d	Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Underground water	2b	«Lône du Grand Gravier», depth >1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).
Underground water	2c	«Lône du Grand Gravier», depth <1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Pristina jenkinae (STEPHENSON, 1931)

Naidium luteum
Pristina idrensis Sperber, 1948

Stygophilous		
Hyporheic	6b	Bou-Rouch pumping in the Rhône River alluvial floodplain, dowstream of it's confluence with the Ain River , Ain (JUGET, 1980).
Spring	32	Spring of Cayssac, Aveyron River basin, upstream of Rodez, La Loubière, Aveyron (GIANI, 1984 and referred to by SAMBUGAR *et al.*, 2005).
Well	87	Well in Terrieu, hydrographic basin of the Lez exsurgence, Saint-Mathieu- de-Tréviers, Hérault (MALARD *et al.*, 1994).
Artificial	150	Emmerin's drinking water reservoir, Lille, Nord (MONIEZ, 1888).
Wells	95	Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Pristina osborni (WALTON, 1906)

Pristinella osborni (WALTON, 1906)

Stygophilous		
Hyporheic	6c	Rhône River, Ain (LAFONT & DURBEC, 1990, LAFONT, 1992 and referred to by GIANI *et al.*, 2001).

Pristina sima (MARCUS, 1994)

Pristinella sima (MARCUS, 1944)

Stygophilous		
Hyporheic	33	Dourdou River at Vabres-l'Abbaye (07/11/1986), Vabres-L'Abbaye, Aveyron (GIANI *et al.*, 2001).

Slavina appendiculata (D'UDEKEM, 1855)

Stygoxen		
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Specaria josinae (VEJDOVSKY, 1883)

Stygoxen		
Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Stylaria lacustris (LINNAEUS, 1767)

Stygoxen		
Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Uncinais uncinata (ÖRSTED, 1842)

Stygoxen		
Cave	53	La Germaine undergound River, *Leg.* B. Lebreton, Groléjac, Dordogne (GIANI *et al.*, 2001 and referred to by SAMBUGAR *et al.*, 2005).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Vejdovskyella intermedia (BRETSCHER, 1896)

Stygoxen		
Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9

		in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic	1c	Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Hyporheic	1d	Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).

Enchytraeidae

Achaeta eiseni VEJDOVSKY, 1878

Stygophilous

Hyporheic	15	Lachein creek near Alas, Alas, Ariège (ROUTE *et al.*, 2004 and referred to by SAMBUGAR *et al.*, 2005).

Achaeta sp.

Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic	1c	Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Underground water	2b	«Lône du Grand Gravier», depth >1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).
Wells	95	Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Bryodrilus elhersi UDE, 1892

Stygoxen

Artificial	14b	Slate quarry of Fumay and of Sainte-Anne (04/01/1933), Fumay, Ardennes (HUSSON, 1936 and referred to by CERNOSVITOV, 1939).
Artificial	120a	Nancy mineral field : mine of Custines, entrance on the Mallaloy commune, located in front of Marbache, on the other side of the Moselle River , 11km North-North-West of Nancy (14/12/1933), Custine, Meurthe-et-Moselle (CERNOSVITOV, 1936 and referred to by HUSSON, 1936 and CERNOSVITOV, 1939).
Artificial	120b	Nancy mineral field : mine of Custines, Custines, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	126	Nancy mineral field : mine of Faulx, Faux, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).

Buchholzia appendiculata (BUCHHOLZ, 1862)

Stygoxen

Artificial	114	Nancy mineral field : mine of Saint-Paul, Liverdun, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).

Cernosvitoviella atrata BRETSCHER, 1903

Stygoxen

Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).

Cernosvitoviella carpatica NIELSEN & CHRISTENSEN 1959

Stygoxen

Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic	1c	Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Hyporheic	1d	Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Underground water	2c	«Lône du Grand Gravier», depth <1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).
Hyporheic	89	«Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1984).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Cernosvitoviella palustris HEALY, 1979

Stygoxen

Cave	51	Azerat cave, *Leg.* B. Lebreton, Azerat, Dordogne (GIANI *et al.*, 2001).

Cernosvitoviella sp.

Wells	95	Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Cognettia cognetti (ISSEL, 1905)

Stygoxen

Spring	72	Spring near the «gouffre de Bramabiau» swallow hole, 1350 m a.s.l., Saint-Sauveur-Camprieu, Gard (GIANI, 1979 and referred to by SAMBUGAR *et al.*, 2005).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Cognettia glandulosa (MICHAELSEN, 1888)

Stygoxen

Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in Dole, 1983), Balan, Ain (DOLE, 1983).
Hyporheic	89	«Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1984).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Cognettia sphagnetorum (VEJDOVSKY, 1887)

Stygoxen

Spring	72	Spring near the «gouffre de Bramabiau» swallow hole, 1350 m a.s.l., Saint-Sauveur-Camprieu, Gard (GIANI, 1979 and referred to by SAMBUGAR *et al.*, 2005).

Enchytraeus buchholzi VEJDOVSKY, 1879

Stygophilous

Hyporheic	1d	Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).

Underground water	2c	«Lône du Grand Gravier», depth <1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).
Hyporheic	6a	Rhône River alluvial floodplain upstream of Lyon (underground water and hyporheic), Ain (JUGET, 1980).
Well	38	Covered well in Gruber's house in Illkirch, 8km South of Strasbourg (20/07/1931), Illkirch-Graffenstaden, Bas-Rhin (MOSZINSKY, 1938 and referred to by CERNOSVITOV, 1939)
Hyporheic	89	«Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1984).
Artificial	102	Millery washing place near Nancy, Millery, Meurthe-et-Moselle (CERNOSVITOV, 1941).
Cave	110	Sainte-Reine cave, Moselle River right bank near Pierre-la-Treiche village, 7 km South East of Toul (09/05/1926), Pierre-la-Treiche, Meurthe-et-Moselle (CERNOSVITOV, 1931 and referred to by RÉMY, 1932b, 1943 and by WOLF, 1934, TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	115	Nancy mineral field: mine of Saint-Jean, Pont-Saint-Vincent, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	150	Emmerin's drinking water reservoir, Lille, Nord (MONIEZ, 1888 and referred to by CERNOSVITOV, 1939).
Well	152	Well in Saint-Maurice-Lille, Lille, Nord (MONIEZ, 1888).
Well	158	Lézennes well, Lézennes, Nord (MONIEZ, 1888).
Well	169	Well in Cayeux-sur-Mer, Cayeux-sur-Mer, Somme (MONIEZ, 1888).
Wells	95	Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Enchytraeus cf *buchholzi* VEJDOVSKY, 1879

Stygoxen

Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in Dole, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Enchytraeus flavus MOSZYNSKI, 1938

species dubiae in NIELSEN & CHRISTENSEN (1959)

Stygobiont

Spring	85	Brunnstube, «Grand Ballon des Vosges», 1250 m a.s.l. (17/09/1935), Willer-sur-Thur, Haut-Rhin (MOSZINSKY, 1938 and referred to by CERNOSVITOV, 1939).

Enchytraeus norvegicus ABRAHAMSEN, 1969

Stygoxen

Spring	16	Resurgence of the Baget karstic system, Alas, Ariège (ROUTE *et al.*, 2004 and referred to by SAMBUGAR *et al.*, 2005).

Fridericia (?regularis)

This incomplete identification was probably done by J. Juget who referred to *Fridericia regularis* NIELSEN & CHRISTENSEN, 1959, some not fully mature specimens.

Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic	1c	Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Underground water	2b	«Lône du Grand Gravier», depth >1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).

Fridericia aurita ISSEL, 1905

nomen dubium incertae sedis in SCHMELZ, 2003
Fridericia aurita ISSEL var *biannulata* MOSZYNSKI, 1938

Stygoxen

Spring	101	Spring of Blénod-lès-Pont-à-Mousson (17/04/1932) (some *Niphargus* found), Blénod-lès-Pont-à-Mousson, Meurthe-et-Moselle (TÉTRY, 1938, MOSZINSKY, 1938, referred to by CERNOSVITOV, 1939 and by SAMBUGAR *et al.*, 2005).

Fridericia bisetosa (LEVINSEN, 1884)

Stygoxen

Artificial	105	Longwy mineral field : Mine of Moulaine, Longwy, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Well	147	Well of Riche presbytery, Moselle (CERNOSVITOV, 1941).

Fridericia bulbosa (ROSA, 1887)

nomen dubium in SCHMELZ, 2003

Stygoxen

Artificial	115	Nancy mineral field : mine of Saint-Jean, Pont-Saint-Vincent, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Brackish underground water	165	Beach of Canet-Plage, Canet-en-Roussillon, Pyrénées-Orientales (DELAMARE-DEBOUTTEVILLE, 1954).

Fridericia variata BRETSCHER, 1902

species dubiae in NIESLEN & CHRISTENSEN (1959)
Nomen dubium in SCHMELZ (2003). Probably confused with *F. bulbosa* and *F. bulboides*, following SCHMELZ (2003). TÉTRY (1938) mentionned *F. variata* and *F. bulbosa* in the same work.

Stygoxen

Artificial	125	Nancy mineral field : mine of Ludres, Ludres, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).

Fridericia galba (HOFFMEISTER, 1843)

Fridericia uniglandula STEPHENSON, 1931

Stygoxen

Artificial	48	Metz-Thionville mineral field : mine of Vieux-Château, Vieux-Château, Côte-d'Or (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	104	Longwy mineral field : Mine of Saulnes, Saulnes, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	105	Longwy mineral field : Mine of Moulaine, Longwy, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	109	Longwy mineral field : Mine of Mont-Saint-Martin, Mont-Saint-Martin, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	112	Nancy mineral field : mine of Sainte-Anne, Sexey-aux-forges, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	113	Nancy mineral field : mine of Bois-du-Four, Pont-Saint-Vinvent, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	115	Nancy mineral field : mine of Saint-Jean, Pont-Saint-

Vincent, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).

Artificial 116 Nancy mineral field : mine of Marbache, Marbache, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).

Artificial 118 Nancy mineral field : mine of Maxéville, Maxéville, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).

Artificial 119b Nancy mineral field : mine of Boudonville, Maxéville, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).

Artificial 146 Metz-Thionville mineral field : mine of Ottange, Ottange, Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).

Wells 95 Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Fridericia perrieri (VEJDOVSKY, 1877)

Stygophilous

Artificial 113 Nancy mineral field : mine of Bois-du-Four, Pont-Saint-Vinvent, Meurthe-et-Moselle (TÉTRY, 1938).

Artificial 122 Nancy mineral field : mine of Fontaine-aux-Roches, Chavigny, Meurthe-et-Moselle (TÉTRY, 1938).

Fridericia ratzeli (EISEN, 1872)

Stygoxen

Artificial 120b Nancy mineral field : mine of Custines, Custines, Meurthe-et-Moselle (TÉTRY,1938 and referred to by CERNOSVITOV, 1939).

Artificial 125 Nancy mineral field : mine of Ludres, Ludres, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).

Fridericia sp.

Cave 71 Bramabiau cave, Saint-Sauveur-Camprieu, Gard (LAGARRIGUE, 1950).

Cave 91 «La Balme» cave (05/02/1959), La Balme-les-Grottes, Isère (JUGET, 1959).

Henlea nasuta (EISEN, 1878)

Michaelsenia nasuta EISEN, 1878

Stygoxen

Artificial 111 Mine of Auboué-Moinevville, 10km North-East of Conflans (30/11/1933), Auboué, Meurthe-et-Moselle (CERNOSVITOV, 1936 and referred to by HUSSON 1936, CERNOSVITOV, 1939).

Artificial 119a Nancy mineral field : mine of Boudonville, entrance 2km North Ouest of Nancy (13/11/1933 and 07/12/193), Maxéville, Meurthe-et-Moselle (CERNOSVITOV, 1936 and referred to by HUSSON 1936, CERNOSVITOV, 1939).

Henlea sp.

Underground water 2a «Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE Balan, Ain (DOLE, 1983).

Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Lumbricillus lineatus (MÜLLER, 1774)

Pachydrilus lineatus (MÜLLER, 1774)

Stygoxen

Brackish underground water 165 Beach of Canet-Plage, Canet-en-Roussillon, Pyrénées-Orientales (DELAMARE-DEBOUTTEVILLE, 1954).

Lumbricillus rivalis LEVINSEN, 1883 augm. DITLEVSEN, 1904

Pachydrilus subterraneus VEJDOVSKY, 1889

Pachydrilus lineatus (MÜLLER) in CERNOSVITOV (1939)

Stygoxen

Artificial 155 Water tap, Medicine faculty of Lille, Lille, Nord (MONIEZ, 1888 and VEJDOVSKY, 1889).

Lumbricillus sp.

Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).

Underground water 2a «Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).

Grania postclitellochaeta (KNÖLLNER, 1935)

Nomen dubium in NIELSEN & CHISTENSEN (1959).

Michaelsenia acheta in DELAMARE-DEBOUTTEVILLE (1954).

Stygoxen

Brackish underground water 165 Beach of Canet-Plage, Canet-en-Roussillon, Pyrénées-Orientales (DELAMARE-DEBOUTTEVILLE, 1954).

Marionina argentea (MICHAELSEN, 1889)

Stygophilous

Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).

Hyporheic 1c Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).

Hyporheic 1d Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (Juget ,1984).

Underground water 2a «Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).

Underground water 2b «Lône du Grand Gravier», depth >1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).

Underground water 2c «Lône du Grand Gravier», depth <1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).

Hyporheic 6a Rhône River alluvial floodplain upstream of Lyon (underground water and hyporheic), Ain (JUGET, 1980).

Hyporheic 89 «Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1984).

Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Cave 91 «La Balme» cave (05/02/1959), La Balme-les-Grottes, Isère (JUGET, 1959 and referred to by GINET, 1961).

Spring 103 Fountain in Millery near the city of Nancy, Millery, Meurthe-et-Moselle (CERNOSVITOV, 1941 and referred to by SAMBUGAR *et al.*, 2005).

Wells 95 Alluvial aquifer, Forez plain, Loire river catchment, (PARAN *et al.*, 2005).

Marionina riparia BRETSCHER, 1899

Stygoxen

Hyporheic 1d Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).

Hyporheic 89 «Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1984).

Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Marionina sp.

Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Marionina subterranea (KNÖLLNER, 1935)
Michaelsenia subterranea in DELAMARE-DEBOUTTEVILLE (1954)

Stygophilous Brackish underground water	165	Beach of Canet-Plage, Canet-en-Roussillon, Pyrénées-Orientales (DELAMARE-DEBOUTTEVILLE, 1954).

Mesenchytraeus pelicensis ISSEL, 1905

Stygoxen Artificial	14a	Slate quarry of Truffy, 4 km west of Renwez (05/01/1934), Rimogne, Ardennes (CERNOSVITOV, 1936 and referred to by HUSSON, 1936, HUSSON 1938, TÉTRY, 1938 and CERNOSVITOV, 1939).
Artificial	113	Nancy mineral field : mine of Bois-du-Four, Pont-saint-Vinvent, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	115	Nancy mineral field : mine of Saint-Jean, Pont-Saint-Vincent, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	116	Nancy mineral field : mine of Marbache, Marbache, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	120b	Nancy mineral field : mine of Custines, Custines, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	125	Nancy mineral field : mine of Ludres, Ludres, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Artificial	126	Nancy mineral field : mine of Faulx, Faulx, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).

Pachydrilus fossor VEJDOVSKY, 1887, *species inquirendae*

Stygobiont Well	153	Well of M. Ed. Barrois in Fives-Lille, Fives-Lille, Nord (MONIEZ, 1888). One immature specimen only ; unidentifiable material to our opinion.

Propappidae

Propappus volki MICHAELSEN, 1916

Stygophilous Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic	1d	Miribel canal, depth <1meter (site n°1 in Juget, 1987, site n°9 in Gibert *et al.*, 1977 and in Dole, 1983), Niévroz, Ain (JUGET, 1984 and referred to by JUGET & DUMNICKA 1986, DOLE-OLIVIER *et al.*, 1994).
Hyporheic	6b	Bou-Rouch pumping in the Rhône River alluvial floodplain, dowstream of it's confluence with the Ain River, Ain (JUGET, 1980 and referred to by JUGET & DUMNICKA 1986, DOLE-OLIVIER *et al.*, 1994).
Hyporheic	79	Neste d'Aure River in Sarrancolin, 610m a.s.l., Sarrancolin, Hautes-Pyrénées (GIANI, 1979).
Hyporheic	82	Nistos brook, 470m a.s.l., Nistos, Hautes-Pyrénées (GIANI, 1979).
Hyporheic	84	Neste d'Aure River at Bisous bridge, 470m a.s.l., Hautes-Pyrénées (GIANI, 1979).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Dorydrilidae

Dorydrilus michaelseni PIGUET, 1913

Stygophilous Hyporheic	1c	Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Hyporheic	1d	Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Underground water	2b	«Lône du Grand Gravier», depth >1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).
Hyporheic	6a	Rhône River alluvial floodplain upstream of Lyon (underground water and hyporheic), , Ain (JUGET, 1980 and referred to by JUGET & DUMNICKA 1986, DOLE-OLIVIER *et al.*, 1994).
Cave	11	Corveissat cave, southern Jura (17/02/1959), Corveissiat, Ain (JUGET, 1959 and referred to by JUGET & DUMNICKA, 1986, GINET, 1987).
Spring	12	La Touvière spring, southern Jura, Samognat, Ain (JUGET & DUMNICKA, 1986).
Superficial groundwater	47	Superficial groundwater, between the Tille River and the Norges River, Norges-la-Ville, Côte-d'Or (JUGET & DUMNICKA, 1986).
Spring	92	Lavour spring, southern Jura, Nantey, Jura (JUGET & DUMNICKA, 1986).
Spring	93	Valsin spring, southern Jura, Fétigny, Jura (JUGET & DUMNICKA, 1986).

Parvidrilidae

Parvidrilus n. sp.

	181	No localisation, (JUGET *pers. com.* in MARTINEZ-ANSEMIL *et al.*, 2002).

Lumbriculidae

Bichaeta sanguinea BRETSCHER, 1900

Stygophilous Well	86	Well in Terrieu, hydrographic basin of the Lez exsurgence, Saint-Mathieu-de-Tréviers, Hérault (MALARD *et al.*, 1994).

Cookidrilus ruffoi GIANI, MARTINEZ-ANSEMIL & SAMBUGAR, 2004

Stygobiont
Hyporheic 15 Lachein creek near Alas, Alas, Ariège (ROUTE *et al.*, 2004).

Cookidrilus speluncaeus RODRIGUEZ & GIANI, 1987

Stygobiont
Hyporheic 15 Lachein creek near Alas, Alas, Ariège (ROUTE *et al.*, 2004).
Cave 26b Labouiche River underground flow, near Vernajoul, 5 km North-East of Foix, Baulou, Ariège (RODRIGUEZ & GIANI, 1987).

Rhynchelmis limosella HOFFMEISTER, 1843

Stygoxen
Well 38 Covered well in Gruber's house in Illkirch, 8km South of Strasbourg (20/07/1931), Illkirch-Graffenstaden, Bas-Rhin (MOSZINSKY, 1938 and referred to by CERNOSVITOV, 1939).

Lumbriculus variegatus (MÜLLER, 1774)

Stygoxen
Wells 95 Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Stylodrilus heringianus CLAPARÈDE, 1862

Stygophilous
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic 1c Miribel canal, depth >1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Hyporheic 1d Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984).
Spring 18 Guindoulé fountain, Salat River basin, 1260m a.s.l., Boussenac, Ariège (GIANI, 1976 and referred to by SAMBUGAR *et al.*, 2005).
Spring 59 Spring in the surroundings of Pontarlier : Montpetot, Pontarlier, Doubs (VANDEL, 1920a).
Spring 61 Mont d'Or spring, feeding Jougne, surroundings of Pontarlier, Jougne, Doubs (VANDEL, 1920a).
Spring 62 Spring in the surroundings of Pontarlier : Chateleu, Pontarlier, Doubs (VANDEL, 1920a).
Spring 66 Spring in the surroundings of Pontarlier: Gros-Taureau, Pontarlier, Doubs (VANDEL, 1920a).
Hyporheic 89 «Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1984).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Stylodrilus lemani (GRUBE, 1879)

Bythonomus lemani (GRUBE, 1879)
Stygophilous
Hyporheic 1b Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Cave 11 Corveissat cave, southern Jura (17/02/1959), Corveissiat, Ain (JUGET, 1959 and referred to by GINET, 1961, GINET 1987).
Spring 56 Spring in the surroundings of Pontarlier: Bannans, Bannans, Doubs (VANDEL, 1920a).
Spring 63 Spring in the surroundings of Pontarlier: les Granges, Pontarlier, Doubs (VANDEL, 1920a).
Spring 64 Spring in the surroundings of Pontarlier: Pontarlier, Pontarlier, Doubs (VANDEL, 1920a).
Spring 65 Spring in the surroundings of Pontarlier : Sainte-Colombe, Pontarlier, Doubs (VANDEL, 1920a).
Spring 94a Spring in the Lavaux valley : la Ferrière springs, Vaux-sur-Poligny, Jura (VANDEL, 1920a).
Spring 94b Spring in the Lavaux valley : la Clusette springs near Vaux, Vaux-sur- Poligny, Jura (VANDEL, 1920a).
Cave 178 Caves of the Jura mountains and Dauphiné's Alps, (GINET, 1961).

Stylodrilus mirus (CEKANOVSKAYA, 1956)

Stygoxen
Wells 95 Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Stylodrilus parvus (HRABE & CERNOSVITOV, 1927)

Stygophilous
Underground water 2a «Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Underground water 2c «Lône du Grand Gravier», depth <1meter, (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (JUGET, 1984).
Cave 11 Corveissat cave, southern Jura (17/02/1959), Corveissiat, Ain (JUGET, 1959 and referred to by GINET, 1961, GINET 1987).
Hyporheic 89 «Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET, 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1984).
Hyporheic 90 «Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).
Cave 178 Caves of the Jura Mountains and Dauphiné's Alps, (GINET, 1961).

Stylodrilus sp.

Wells 95 Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Trichodrilus angelieri GIANI & RODRIGUEZ, 1994

Trichodrilus sp. 4 RODRIGUEZ & GIANI, 1994

Stygophilous
Hyporheic 46 Tributary of the San Pietro River, in Bavella forest (27/08/1950), *Leg.* E. Angelier, Quenza, Corse (RODRIGUEZ & GIANI, 1994).
Hyporheic 46 Tributary of the San Pietro River, in Bavella forest (27/08/1950), *Leg.* E. Angelier, Quenza, Corse (GIANI & RODRIGUEZ, 1994).

Trichodrilus bonheurensis GIANI & RODRIGUEZ, 1994

Trichodrilus sp. 2 RODRIGUEZ & GIANI (1994)

Stygophilous
Hyporheic 43a Des Cros brook, second order tributary of the Truyère River (Lot River Tributary) (09/11/1982), Cantal (GIANI & RODRIGUEZ, 1994).
Hyporheic 73 Bonheur River, downstream of Camprieu, 700m a.s.l. (27/02/1985), Saint-Sauveur-Camprieu, Gard (RODRIGUEZ & GIANI, 1994).

Trichodrilus campoyi RODRIGUEZ, 1988

Stygophilous		
Cave	10	« Le Trou des Voleurs » cave, near Poncin, Southern Jura (17/06/1999), Poncin, Ain (JUGET & CREUZÉ DES CHÂTELIERS, 2001).
Spring	28	Lantouy's resurgence (22/03/1987), Salvagnac-Cajarc, Aveyron (GIANI *et al.*, 2001 and referred to by SAMBUGAR *et al.*, 2005).
Hyporheic	36	Assou brook (22/03/1987), Vailhourles, Aveyron (RODRIGUEZ & GIANI, 1994).
Hyporheic	43b	Des Cros brook, second order tributary of the Truyère River (Lot River Tributary) (29/04/1982), Cantal (RODRIGUEZ & GIANI, 1994).

Trichodrilus cernosvitovi HRABE, 1937

Stygobiont		
Hyporheic	1a	Miribel canal, underground flow of the Rhône River, Niévroz, Ain (JUGET & DUMNICKA, 1986).

Trichodrilus diversisetosus RODRIGUEZ, 1986

Stygophilous		
Hyporheic	6a	Rhône River alluvial floodplain upstream of Lyon, Ain (RODRIGUEZ & GIANI, 1994 and referred to by GIANI *et al.*, 2001).

Trichodrilus intermedius (FAUVEL, 1903)
Trichodriloides intermedius FAUVEL, 1903

Stygobiont		
Spring	69	A specimen mounted *in-toto* in Canada balm, found in Pr. Vandel's collection in Toulouse, France : *Trichodrilus pragensis* Vej., Piguet det., « la Folie » spring, 500m South-west of La Folie farm, Gometz-la-Ville, Essone (VANDEL, 1920b and referred to by JEANNEL 1926).
Well	70	Bois-Joly well, surroundings of Mortagne, Mortagne-au-Perche, Orne (FAUVEL, 1903 and referred to by CERNOSVITOV, 1939, HRABE 1937, JUGET & DUMNICKA 1986).

Trichodrilus leruthi HRABE, 1937

Stygobiont		
Hyporheic	1a	Miribel canal, underground flow of the Rhône River, Niévroz, Ain (JUGET, 1980 and referred to by JUGET & DUMNICKA, 1986, RODRIGUEZ & GIANI, 1994, DOLE-OLIVIER *et al.*, 1994).
Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Hyporheic	1d	Miribel canal, depth <1meter (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (JUGET, 1984 and referred to by JUGET & DUMNICKA 1986, RODRIGUEZ & GIANI 1994, DOLE-OLIVIER *et al.*, 1994).
Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain(JUGET, 1980 and referred to by JUGET & DUMNICKA, 1986, RODRIGUEZ & GIANI, 1994, DOLE-OLIVIER *et al.*, 1994).
Underground water	2b	«Lône du Grand Gravier», depth >1meter, (site n°5 in JUGET, 1987, site n°10 DOLE, 1983), Balan, Ain (JUGET, 1984 and referred to by JUGET & DUMNICKA 1986, RODRIGUEZ & GIANI 1994, DOLE-OLIVIER *et al.*, 1994).
Hyporheic	89	«Lône des Pêcheurs», (site n°2 in GIBERT *et al.*, 1977, parapotamon upstream in JUGET, 1984, site n°3 in JUGET, 1987), Villette-d'Anthon, Isère (JUGET, 1980, 1984 and referred to by JUGET & DUMNICKA, 1986, RODRIGUEZ & GIANI 1994, DOLE-OLIVIER *et al.*, 1994).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).

Trichodrilus macroporophorus HRABE, 1954

Stygophilous		
Superficial waters	177	Hight Pyreneans mountain streams, Massif de Néouvielle, Hautes Pyrénées (GIANI & LAVANDIER, 1977 and referred to by JUGET & DUMNICKA, 1986).

Trichodrilus pragensis (VEJDOVSKY, 1875)
Phreatothrix pragiensis VEJDOVSKY, 1875

Stygobiont		
Well	149	Well of Philippe-le-Bon square in Lille, Lille, Nord (MONIEZ, 1888 and referred to by CERNOSVITOV, 1939).
Well	151	Well of Croquet street in Lille, Lille, Nord (MONIEZ, 1888 and referred to by CERNOSVITOV, 1939).

Trichodrilus cf. *serei* TIMM, 1979

Stygoxen		
Underground water	13	Southern Jura, Ain (CASTELLARINI *et al.*, 2005).

Trichodrilus strandi HRABE, 1936

Stygophilous		
Karstic spring	9	Karstic springs of Bugey, Ain (JUGET & DUMNICKA, 1986 and referred to by SAMBUGAR *et al.*, 2005).
Hyporheic	30a	Lenne brook, Riou-Mort River tributary, Lot River basin, 300m a.s.l., Aubin, Aveyron (GIANI, 1979).
Hyporheic	55b	Dordogne River, upstream and downstream of Cazoulès gravel banks, Cazoulès, Dordogne (LAFONT, 1982, 1989).
Hyporheic	57	Loue River, Doubs River tributary in Mouthier (LAFONT, oral com.), Mouthier-Haute-Pierre, Doubs (GIANI, 1979, LAFONT, 1989).

Trichodrilus tenuis HRABE, 1960

Stygobiont		
Cave	168	Cave «Braizieu», Le Mont d'Or, near Lyon, Rhône River basin, Collonges-au-Mont-d'Or, Rhône (JUGET & CREUZÉ DES CHÂTELIERS, 2001).

Trichodrilus sp.

Underground water	2a	«Lône du Grand Gravier», (site n°5 in JUGET, 1987, site n°10 in DOLE, 1983), Balan, Ain (DOLE, 1983).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.* 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).
Cave	91	«La Balme» cave (05/02/1959), La Balme-les-Grottes, Isère (JUGET, 1959 and referred to by GINET, 1961).

Haplotaxidae

Delaya corbarensis (DELAY, 1972)
Haplotaxis corbarensis DELAY, 1972

Stygobiont		
Cave	163	La Caune Negre cave, Opoul-Périllos, Pyrénées-Orientales (DELAY, 1972 and referred to by JUGET & DUMNICKA, 1986).

Epikarstic spring	164	Spring on the Opoul castel plateau, Opoul-Périllos, Pyrénées-Orientales (BERTRAND, 1974, 1975).

Haplotaxis gordioides (HARTMANN, 1821)

Phreoryctes menkeanus HOFFMEISTER
Phreoryctes endeka GIARD, 1894
Crenothrix kuhniana

Stygophilous Hyporheic	1b	Miribel canal, (site n°1 in JUGET, 1987, site n°9 in GIBERT *et al.*, 1977 and in DOLE, 1983), Niévroz, Ain (DOLE, 1983).
Spring	17	La Piche fountain, Salat River basin, altitude : 970m, Esplas-de-Sérou, Ariège (GIANI, 1976 and referred to by SAMBUGAR *et al.*, 2005).
Cave	35	Sourguettes cave, Veyreau, Aveyron (BRÉHIER, 1998).
Well	40a	Well Norton « Casino «, la Musau, Rhin River riparian forest, 1km away from the Rhin River in Strasbourg (04/09/1937), Strasbourg, Bas-Rhin (MOSZINSKY, 1938 and referred to by CERNOSVITOV, 1939).
Well	42	Kehl's bridge; 2,6 km away from the site «Puits Norton Casino» in MOSZYNSKI (1938), Strasbourg, Bas-Rhin (DODERLEIN, 1898).
Spring	77	Spring, wooded hill of Menisot, West of Servance, Vosges border, Servance,Haute-Saône (RÉMY, 1926, 1932a, 1943).
Well	88	Well in Dingé, Dingé, Ille-et-Vilaine (PESSON, 1935 and referred to by CERNOSVITOV, 1939).
Hyporheic	90	«Lône du Méant», (site n°8 in GIBERT *et al.*, 1977 and in DOLE, 1983, site n°6 in JUGET, 1987), Anthon, Isère (DOLE, 1983).
Well	127	Well in Lay-Saint-Christophe (11/06/1890), Lay-Saint-Christophe, Meurthe-et-Moselle (BRUNOTTE, 1892 and referred to by CERNOSVITOV, 1939).
Well	128	Well in Malzéville, Malzéville, Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939).
Well	154	Well of the Sciences faculty zoology laboratory, Fleurs street in Lille, Lille, Nord (MONIEZ, 1888 and referred to by HESSE, 1923).
Well	156	Well of Cloche street in Douai, Douai, Nord (MONIEZ, 1888 and referred to by HESSE 1923).
Spring	157	Spring waters of Douai, Douai, Nord (Giard, 1888 and referred to by HESSE, 1923).
Well	159	Well of the city of Tourcoing, Tourcoing, Nord (GIARD, 1882 and referred to by MONIEZ, 1888).
Artificial	160	Reservoir of Poterie spring between Wimereux and Boulogne (March 1894), Wimereux, Pas-de-Calais (GIARD, 1894).
Well	161	Well in the surroundings of Saint-Omer, Saint-Omer, Pas-de-Calais (MONIEZ, 1888).
Hyporheic	166	Alluvium from Banyuls-sur-Mer brook, Banyuls-sur-Mer, Pyrénées-Orientales (VANDEL, 1922).
Spring	174	Fountains of Raon-l'Etape, Raon-L'Etape, Vosges (Tétry, 1938 and referred to by CERNOSVITOV, 1939).
Wells	95	Alluvial aquifer, Forez plain, Loire river catchment, Loire (PARAN *et al.*, 2005).

Haplotaxis leruthi (HRABE, 1958)

Pelodrilus leruthi HRABE, 1958

Stygobiont Cave	19	Cave «Gouffre de la Coume Ferrat», Balaguères, Ariège (MAGNIEZ, 1968 and referred to by DELAY, 1970, JUGET & DUMNICKA, 1986).
Cave	20a	Estelas cave (21/09/55), Cazavet, Ariège (JEANNEL, 1920 and referred to by DELAY, 1970).
Cave	20b	Lestelas cave (21/09/1955) (Dr. R. Husson leg.), Cazavet, Ariège (HRABE, 1958 and referred to by DELAY, 1970, JUBERTHIE & MESTROV, 1965b).
Cave insaturated zone	21a	Brooks in Peyort cave, Prat-Bonrepaux, Ariège (JEANNEL & RACOVITZA, 1914 and referred to by DELAY, 1970, JUBERTHIE & MESTROV, 1965b).
Cave	21b	Peyort cave (19/09/1955) (Dr. R. Husson), Prat-Bonrepaux, Ariège (HRABE, 1958).
Cave saturated and unsaturated zone	22	Liqué cave, brook and pools, Moulis, Ariège (MESTROV, 1962 and referred to by DELAY, 1970, JUBERTHIE & MESTROV, 1965b).
Cave	23	Plagnol de la Plagne in Moulis (01/11/1956) (Dr Heurot leg.), Moulis, Ariège (JEANNEL & RACOVITZA, 1929, HRABE, 1958 and referred to by DELAY, 1970).
Cave	25	Cave «Aven du Tuc des Mandres», St-Girons, Lacourt, Ariège (BOU & BOUILLON, 1965).
Cave	76	Goueil-di-Her, Gourgue hamlet, altitude : 495m a.s.l., Arbas, Haute-Garonne (MESTROV, 1962, LESCHER-MOUTOUÉ, 1973 and referred to by DELAY, 1970).
Cave	81	L'Eglise cave in Bas-Nistos, Nistos, Hautes-Pyrénées (JUBERTHIE & MESTROV, 1965a, 1965b and referred to by DELAY, 1970).

Lumbricidae

Eiseniella tetraedra SAVIGNY, 1826

Stygophilous Spring	17	La Piche fountain, Salat River basin, 970m a.s.l., Esplas-de-Sérou, Ariège (GIANI, 1976).
Cave	24	Touasse-Peyrou cave, Taurignan-Vieux, Ariège (OMODEO, 1961 and referred to by JUBERTHIE & MESTROV 1965a).
Cave	27	Lavelanet cave, Lavelanet, Ariège (COGNETTI DE MARTIIS, 1904 and referred to by CERNOSVITOV, 1939, JUBERTHIE & MESTROV, 1965a).
Cave	71	Bramabiau cave, Saint-Sauveur-Camprieu, Gard (COGNETTI DE MARTIIS, 1902, 1904, WOLF, 1934 as *E. hercynia* in LAGARRIGUE, 1950, TÉTRY, 1938, and referred to by JEANNEL, 1926 and by CERNOSVITOV, 1939).
Cave	80	Bédat cave near Bagnères de Bigorre, Bagnères-de-Bigorre, Hautes-Pyrénées (COGNETTI DE MARTIIS, 1902, 1904 and referred to by JEANNEL 1926, WOLF 1934, CERNOSVITOV, 1939).
Cave	91	«La Balme» cave (05/02/1959), La-Balme-les-Grottes, Isère (GINET, 1961).
Cave	96	Cave «Gouffre de Padirac», Padirac, Lot (COGNETTI DE MARTIIS, 1902, 1904, VIRÉ, 1902, 1904 and referred to by JEANNEL, 1926, CERNOSVITOV, 1939, LAGARRIGUE, 1950 and LEBRETON, 1986).
Artificial	97	Rairies quarry, Les Rairies, Maine-et-Loire (BEAUCOURNU & MATILE, 1963).
Cave	98	«Cave-à-Margot» cave, Thorigné-en-Charnie, Mayenne (BEAUCOURNU & MATILE, 1963).
Cave	99	Rochefort cave, Thorigné-en-Charnie, Mayenne (BEAUCOURNU & MATILE, 1963).
Cave	100	Courtaliéru cave, Vimarcé, Mayenne (BEAUCOURNU & MATILE, 1963).
Artificial		Longwy mineral field , Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939):
	104	Mine of Saulnes, Saulnes
	105	Mine of Moulaine, Longwy
	106	Mine of Mont-Saint-Martin, Longwy
	107	Mine of Micheville, Longwy
	108	Mine of Hussigny, Longwy
Cave	110	Sainte-Reine cave, Moselle River right bank near Pierre-la-Treiche village, 7 km South-East of Toul (09/05/1926), Pierre-la-Treiche, Meurthe-et- Moselle (CERNOSVITOV, 1931 and referred to by RÉMY 1932b, CERNOSVITOV 1939).
Artificial		Nancy mineral field Meurthe-et-Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939):
	112	Mine of Sainte-Anne, Sexey-aux-Forges
	114	Mine of Saint-Paul, Liverdun

	115	Mine of Saint-Jean, Pont-Saint-Vincent
	116	Mine of Marbache, Marbache
	117	Mine of Champigneules, Champigneulles
	118	Mine of Maxéville, Maxéville
	120b	Mine of Custines, Custines
	121	Mine of Bouxières-aux-Dames, Bouxières-aux-Dames
	122	Mine of Fontaine-aux-Roches, Chavigny
	123	Mine of La Flye, Nancy
	124	Mine of Chevenois, Nancy
	125	Mine of Ludres, Ludres
Artificial	134	Mines of Glénac, Glénac, Morbihan (BEAUCOURNU & MATILE, 1963).
Artificial		Metz-Thionville mineral field, Moselle (TÉTRY, 1938 and referred to by CERNOSVITOV, 1939):
	135	Mine of Rédange, Rédange
	136	Mine of Aumetz, Aumetz
	137	Mine of Moyeuvre, Moyeuvre-Grande
	138	Mine of Angevillers, Angevillers
	139	Mine of Hayange, Hayange
	140	Mine of Saint-Paul, Rombas
	141	Mine of Krémer, Metz-Thionville
	142	Mine of Orne, Thionville
	143	Mine of Langenberg, Metz-Thionville
	144	Mine of Roncourt, Thionville
	145	Mine of Charles-Ferdinand, Metz-Thionville
Cave	170	Cave «Aven de Ferrières», Penne, Tarn (BOU, 1966).
Cave	171	St-Gérycave cave, biosp N°482 , Loze, Tarn-et-Garonne (BOU, 1966).
Artificial	172	Catacombs of Paris, Paris, Ville de Paris (COGNETTI DE MARTIIS, 1902, 1904 and referred to by JEANNEL, 1926, WOLF, 1934 and CERNOSVITOV, 1939).
Artificial	180	Artificial caves, (HUSSON, 1936 and referred to by CERNOSVITOV, 1939).

Dendrobaena rubida (SAVIGNY, 1826)

Stygophilous		
Cave	91	«La Balme» cave (05/02/1959), La-Balme-les-Grottes, Isère (GINET, 1961).

3. Discussion

1. Publications

Ninety-three publications from 1882 to 2005 have been recorded. The cumulative curve of publications on the topic (Fig. 1) from 1882 to 2005 shows a constant evolution over the years with an increase in the past thirty years. It reflects the way scientists have been considering the underground fauna and Oligochaeta and Polychaeta in particular over the years, and how this discipline has been evolving. Two distinctive periods can be observed.

(1)Thirty-two papers only have been published between 1882 and 1960. This low number of publications reflects a slow start in the interest in subterranean aquatic Oligochaeta and Polychaeta. It is probably due to the small size of the studied organisms, together with the difficulties in sampling their habitat and determining them. The cumulative curve also clearly indicates the negative impact of the two world wars on research, at least on this topic.

(2)From the 60's, Oligochaeta and to a lesser extent Polychaeta, benefited from the development of research following the reconstruction of the countries after the second world war and also the raise of interest in subterranean waters in general. The presence of taxonomists specialised in these groups also contributed greatly to a growing number of publications. The number of publications per year is not high (1 or 2 publications as an average) but remains constant over the years to reach 93 publications in 2005.

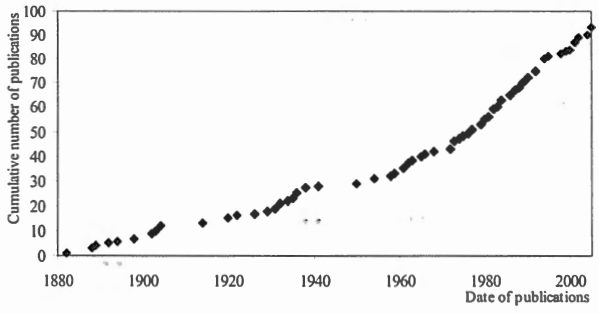

Figure 1. Cumulative curve of publications concerning freshwater subterranean Oligochaeta and/or Polychaeta from 1882 to 2005.

2. Sites localisation

All together, 203 sites and 2 groups of sites within larger areas have been sampled from 1882 to 2005. The sampling effort is very unequal over the French territory (Fig. 2a). Mapping of the collected sites clearly shows the two main factors of their distribution on the French territory; these two factors are related to one another:

(1) At first, scientists have entered the subterranean environment through human scale pathways, either natural (caves) or artificial (mines). As a result, karstic aquifers were the first entity of the subterranean realm to be taken into account ; porous ones drove attention of the scientific community afterward. This historical fact is reflected in the repartition of sampling sites in France. Most sampling sites are located within or in the range of karstic areas (Fig. 3) and a few authors (Rémy, 1932a, 1932b, Husson, 1936, 1938, Tétry, 1938) sampled abandoned iron mines of the North-East. Afterward these areas kept on being sampled as the vision of the aquatic subterranean biota enlarged, encompassing alluvial waters as well.

(2) Localisation of sampling sites is related on scientist's laboratory localisation or area of interest (Fig. 2b). Over 62% of the sites (126 sites) have been sampled by 10% of the 57 scientists who published on the topic. BEAUCOURNU AND MATILE (1963) concentrated on a few sites in the Morbihan and Mayenne departments, JUGET (1959, 1980, 1984, 1987), JUGET and collaborators (JUGET & LAFONT, 1979; JUGET & DUMNICKA, 1986; JUGET & CREUZÉ DES CHÂTELIERS, 2001), LAFONT (1982, 1989) and LAFONT and collaborators (LAFONT *et al.*, 1992; GIANI & LAFONT, 1981; LAFONT & DURBEC, 1990) worked in the upper Rhône River basin, GIANI (1976, 1979, 1984) and GIANI and collaborators (GIANI & LAVANDIER 1977; GIANI & LAFONT, 1981; RODRIGUEZ & GIANI, 1987, 1989, 1994; GIANI *et al.*, 1990; GIANI *et al.*, 2001; GIANI & RODRIGUEZ 1994; SAMBUGAR *et al.*, 1999; SAMBUGAR *et al.*, 2005; ROUTE *et al.*, 2004) covered a larger area in southern France.

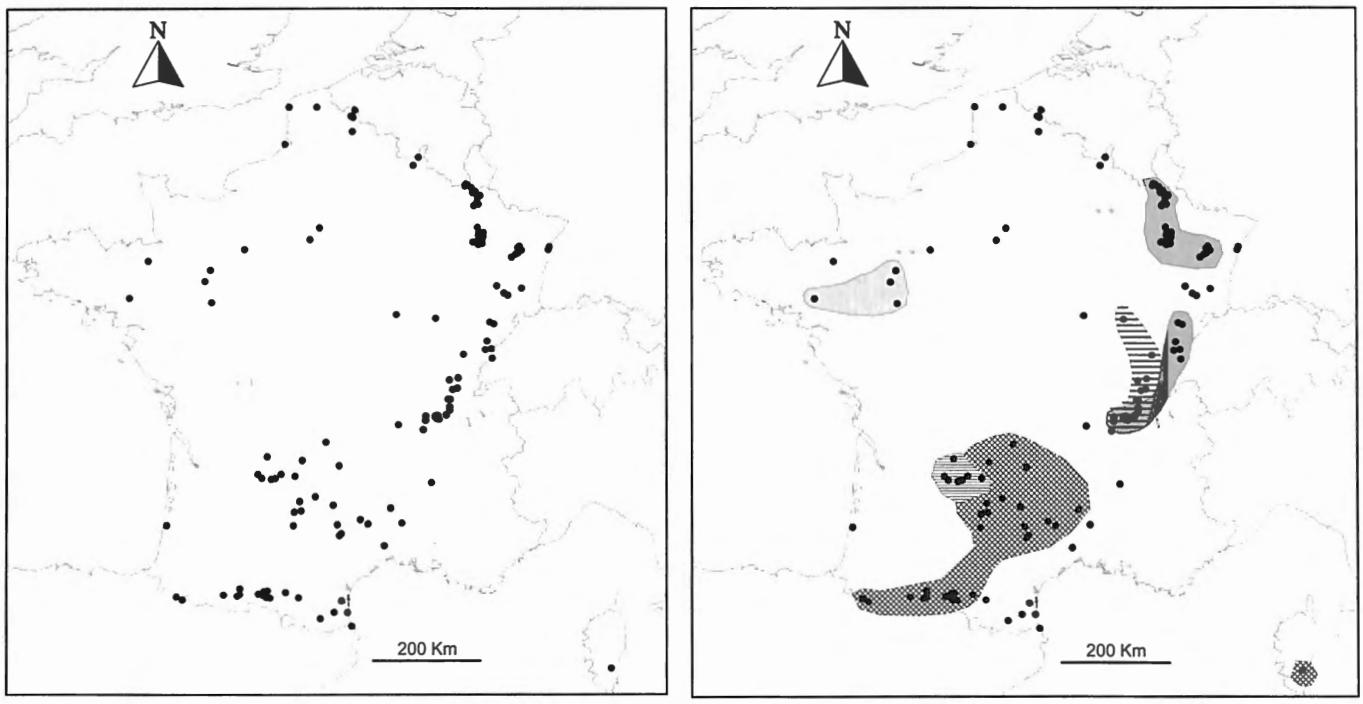

Figure 2. Sampling sites distribution of freshwater subterranean Oligochaeta and Polychaeta in France. a) Sampling sites; b) areas sampled by scientists: Tétry, 1938 (diagonal lines); BEAUCOURNU & MATILE, 1963 (dots), JUGET, 1959 to 2001 (grey); Giani, 1976 to 2004 (grid pattern) and Lafont, 1979 to 1990 (horizontal lines).

3. Oligochaeta and Polychaeta subterranean fauna

a. Qualitative Diversity: present day taxonomic diversity

The aquatic Oligochaeta considered here belong to 9 families: Haplotaxidae (3 species), Dorydrilidae (1 species), Lumbriculidae (24 species), Naididae (29 species), Tubificidae (27 species), Parvidrilidae (2 species), Proppapidae (1 species), Enchytraeidae (33 species) and Lumbricidae (2 species). Three families of Polychaeta are also taken into account: Aeolosomatidae (5 species) and Potamodrilidae (1 species) belonging to the Aeolosomatida and Nerellidae (1 species) belonging to the Archiannelida. Among these 12 families of Annelida, 3 are monospecific, one is monospecific in freshwater habitats. Lumbriculidae, Naididae and Tubificidae are the freshwater families with the greatest diversity in subterranean biota. The amphibious Enchytraeidae are also well diversified in underground freshwaters. It should be noted that some species collected in the sand of beaches are marine species.

b. Quantitative Diversity: evolution and present day knowledge of taxa richness

In 2005, 137 Oligochaeta and Polychaeta taxa are recorded (See Results section 2.2 and Fig. 1). Among them 122 are identified to the specific level: 114 Oligochaeta species and 7 Polychaeta species. Figure 4 shows the evolution of the number of species known in France. For the last three decades the total number of species found in subterranean freshwaters rose to 190% reflecting the greater interest for these two groundwater Annelida taxa. The cumulative number of species shows a stepped pattern with three periods

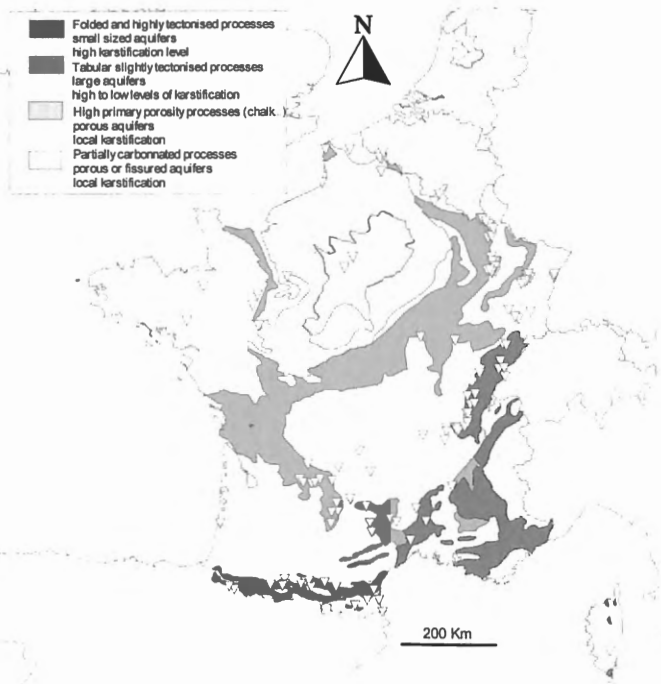

Figure 3. Simplified map of karstic regions in France (after MARSAUD, 1996, modified) with sampled sites (empty triangles).

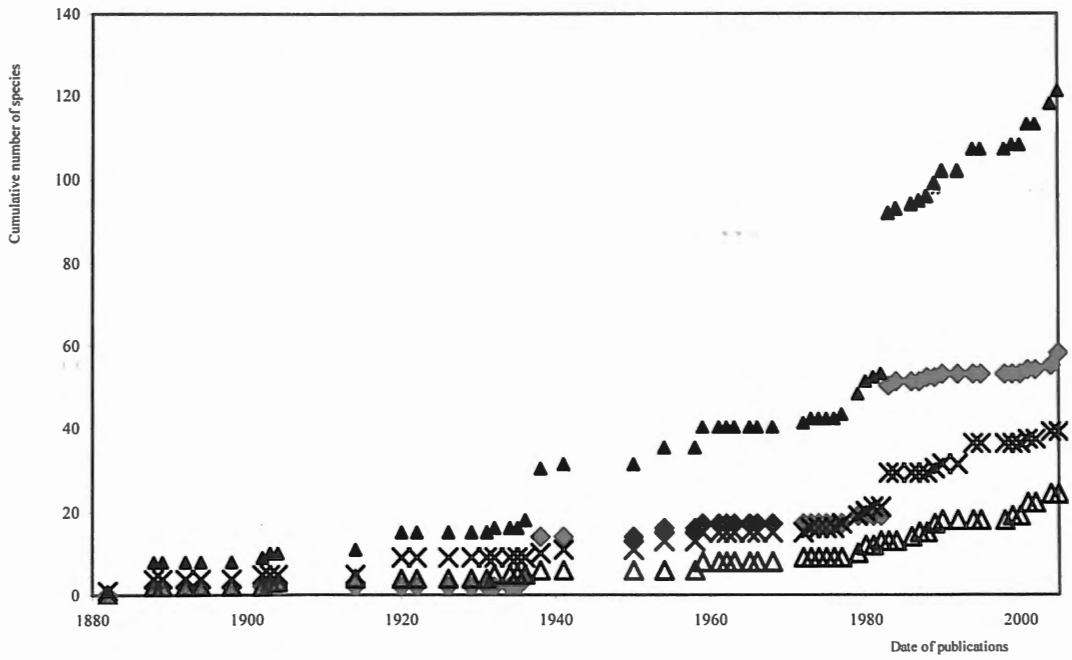

Figure 4. Cumulative curves of freshwater subterranean Oligochaeta and Polychaeta species new in France from 1882 to 2005. All species (black triangles), stygoxen species (grey diamonds), stygophilous species (crosses) and stygobiont species (empty triangles).

with almost no new records: the first period from 1888 to 1914; the second one from 1920 to 1935 and the third one from 1959 to 1979. Steep increases are observed in 1938 (19 to 30 species total) and 1983 (55 to 99 species total). These raises in the number of known Oligochaeta and Polychaeta found in ground freshwaters in France essentially concern stygoxen species (5 to 14 in 1938 and 19 to 50 in 1983). It is interesting to note that a raise in the number of publications is not always correlated with a raise in the number of recorded species as shown in figure 5. The cumulative number of

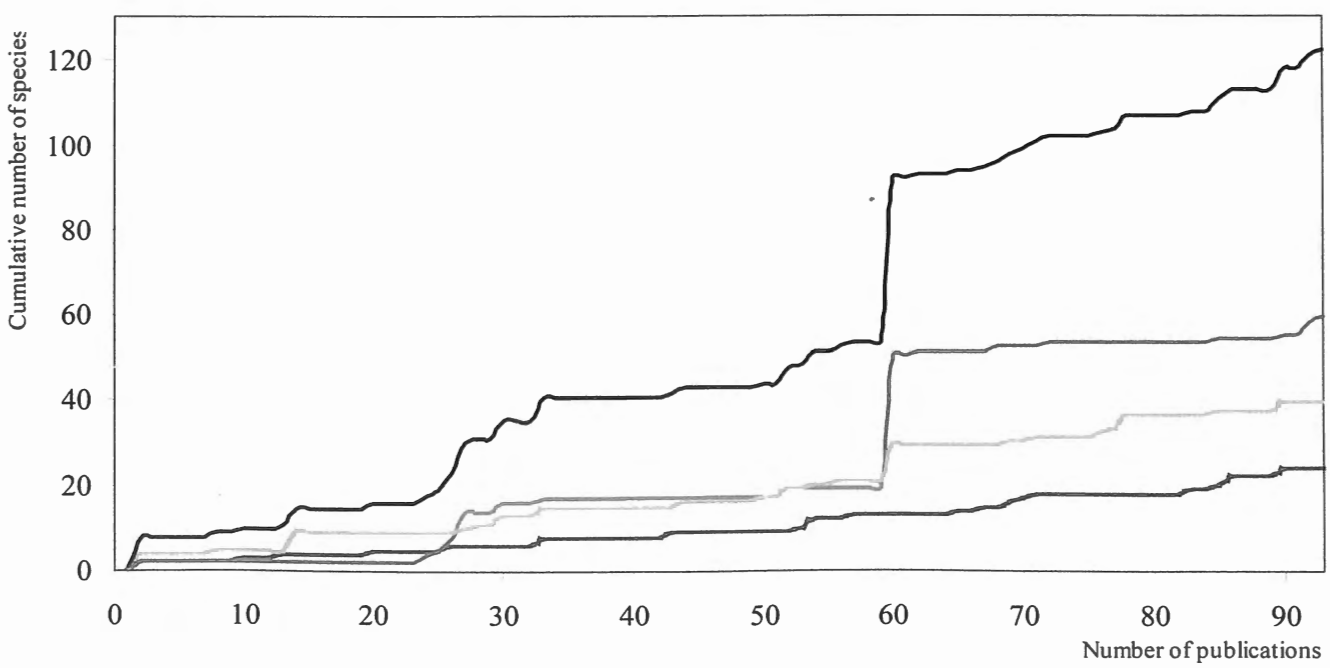

Figure 5. Cumulative curves of freshwater subterranean Oligochaeta and Polychaeta species new in France as a function of publications ranged in chronological order. All species (black line), stygoxen species (grey line), stygophilous species (light dotted line) and stygobiont species (dark doted line).

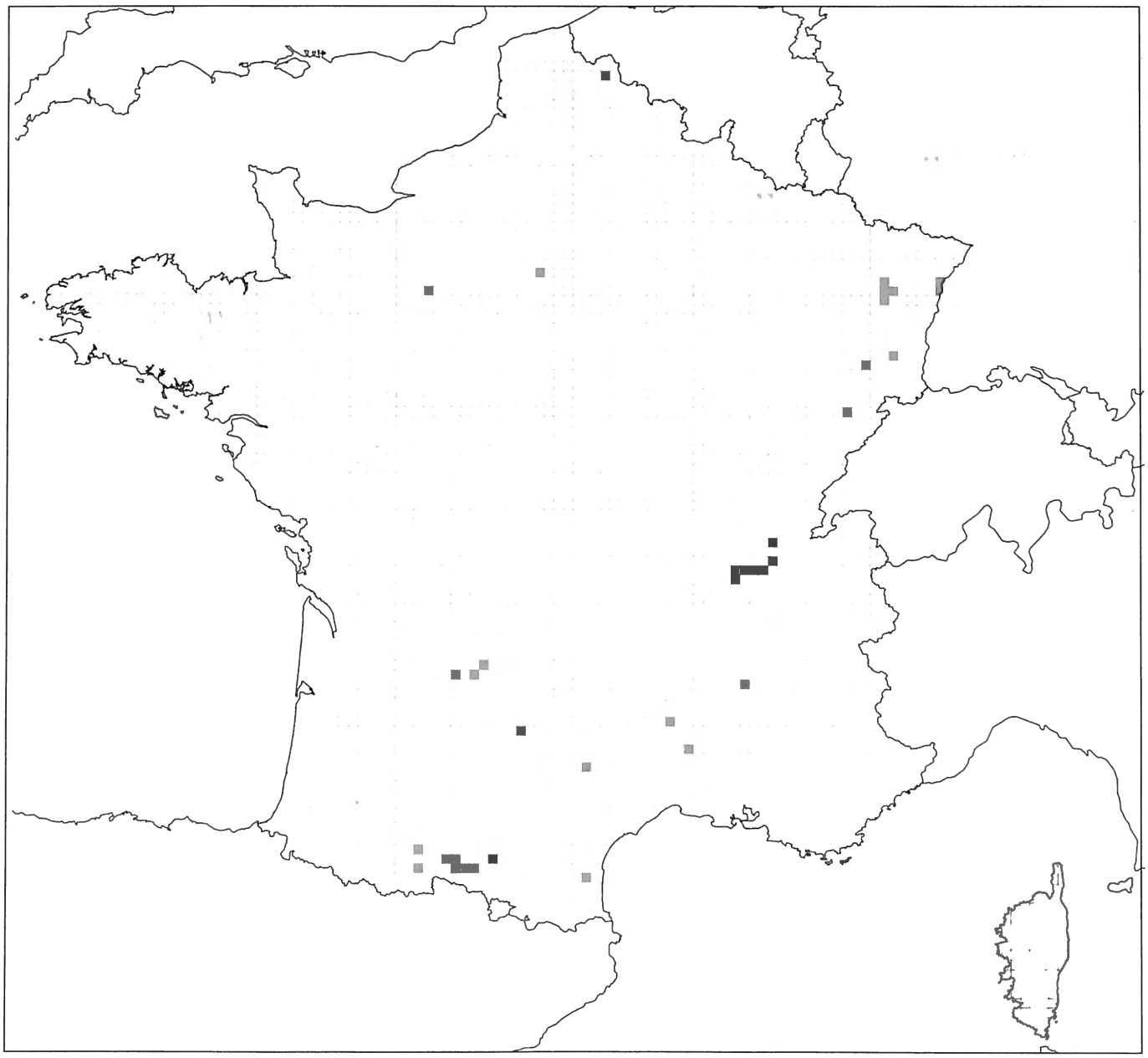

Figure 6. Geographical distribution of the number of stygobiont Oligochaeta and Polychaeta species among WGS84 10 x 10 km grid cells in France. Range from 1 species (light grey squares) to 8 species (black squares); 2 to 4 species in dark grey squares.

known species follows a stepped pattern while the cumulative number of publications shows a regular growth pattern. This difference between publications and number of species can be explained by different factors. During the first years, from 1882 to 1914, there were not many specialists; the discipline was in its beginning. The second period, from 1920 to 1939, shows sporadic sampling events in different parts of the country which lead mainly to new localities for already known species. During the third period, from 1959 to 1979, species have been described mainly by specialists of terrestrial organisms, lacking the knowledge and interest in aquatic species.

4. Stygobiont, stygophilous and stygoxen species richness

Within these two Annelida taxa, 24 species are considered true stygobiont, 39 are considered stygophilous, 59 are considered stygoxen species, *Nais communis* is ubiquitous and therefore could not be classified; the 15 remaining taxa could not be classified regarding to their status: among them some are not identified at the specific level and the others are not identified with certainty (Results section 2.2). For the last two decades the total number of known stygobiont species rose by 85%, the number of known stygophilous species by

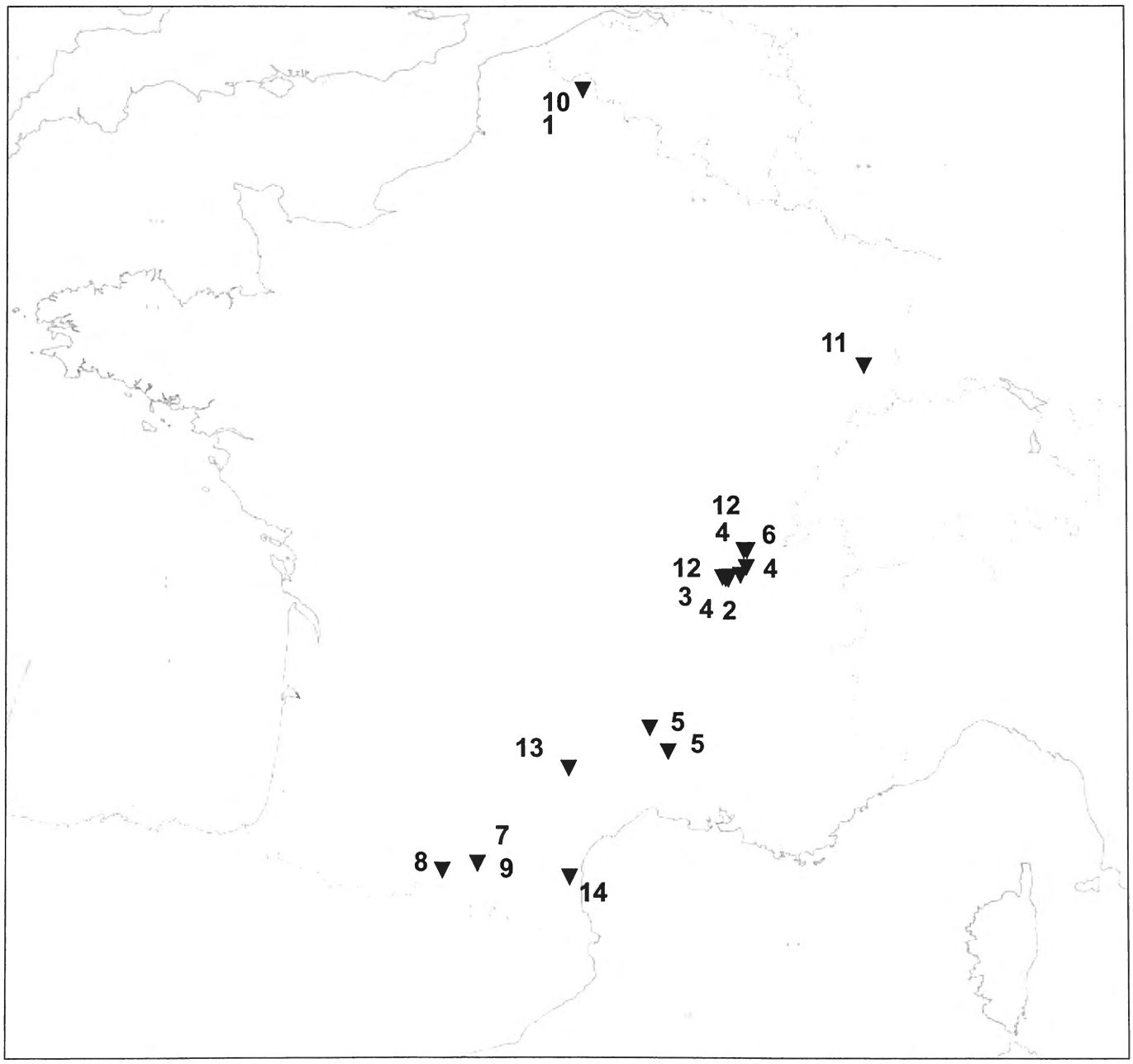

Figure 7. Geographical distribution of endemic stygobiont Oligochaeta and Polychaeta species in France : 1. *Trichodrillus pragensis*, 2. *Trichodrilus cernosvitovi*, 3. *Trichodrilus leruthi*, 4. *Rhyacodrilus balmensis*, 5. *Rhyacodrilus lindbergi*, 6. *Gianius cavealis*, 7. *Gianius labouichensis*, 8. *Cookidrilus ruffoi*, 9. *Cookidrilus speluncaeus*, 10. *Pachydrilus fossor sp. inquirendae*, 11. *Enchytreus flavus species dubiae*, 12. *Haber turquini*, 13. *Krenedrilus sergei*, 14. *Delaya corbarensis*.

35% and the number of known stygoxen species by 16% (Fig. 4). Knowledge of species from underground waters in France as a function of the number of publications evolved in a stepwise pattern (Fig. 5). This is particularly true for the total number of species and the number of stygoxen species and to a lesser extent for stygophilous species. The curve of the cumulative number of stygobiont species, unlike the others, follows a straighter pattern (Fig. 5).

Twenty-two stygobiont Oligochaeta species and two stygobiont Polychaeta species (the dubious *Aelosoma gineti* and *Troglochaetus beranecki*) have been found on the French sampled territory. Stygobiont species are present in all sampled areas with the exception, however, of the North-East where only artificial subterranean environments (mines, TÉTRY, 1938) were sampled (Fig. 6). The highest number of species occurs in the upper Rhône River region and in the Pyrenean range which are the most sampled areas. There are no stygobiont Polychaeta which can be considered endemic to France. From the 22 stygobiont Oligochaeta species, 14 (64%) can be considered as endemic as they are so far known from very restricted areas, if not from one locality only (Fig. 7). Not surprisingly, stygobiont Oligochaeta, as other subterranean organisms, show a high level of endemicity.

Stygophilous Oligochaeta and Polychaeta species are present

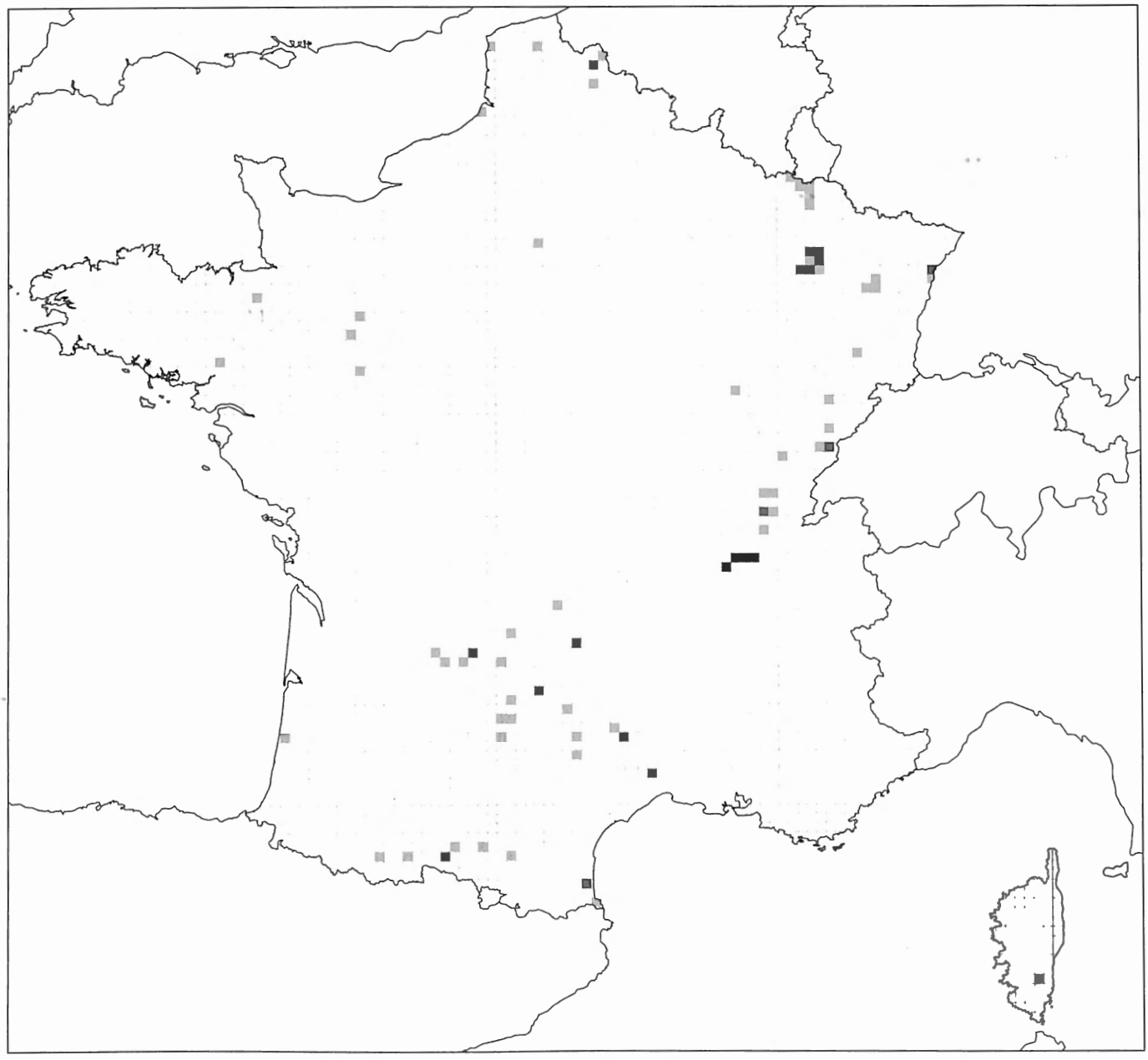

Figure 8. Geographical distribution of the number of stygophilous Oligochaeta and Polychaeta species among WGS84 10 x 10 km grid cells in France. Range from 1 species to 14 species; 1 species (light grey squares), 2 to 4 species (dark grey squares), 8 to 14 species (black squares).

all over the sampled territory, even in artificial subterranean environments (Fig. 8). The highest number of species is found in the most sampled areas. No endemic stygophilous species has been found in France.

Two comprehensive studies of the fauna in general (TÉTRY, 1938) and of the subterranean fauna (DOLE, 1983) contributed to an important raise in number of known Oligochaeta species found in subterranean waters. These results essentially concerned stygoxen species. This is due to the fact that these two studies took all species into account, where other publications dealt with stygobiont (or eventually stygophilous) species only without mentioning the associated fauna (i.e. stygoxen) which was probably present but not recorded. These two studies resulted in a more exhaustive picture of what subterranean communities of Oligochaeta are: a mixture of stygoxen, stygophilous and stygobiont species, this being particularly true for surface related environments as for the hyporheic study of DOLE (1983). The question remains whether the present knowledge of the occurence of stygoxen species in subterranean environment has reached its highest level or not. Stygoxen species are superficial ones, occasionally found in ground waters; superficial Oligochaeta (and Polychaeta) have a wide distribution range, and communities are likely to resemble one another in different parts

Table 1. Sites coordinates and bibliographical references. Coordinates, when available, are given in decimal degrees, World Geodesic System (WGS 84). Sites are classified by department.

Site code	Coordinates X	Coordinates Y	Bibliographical references
Ain			
1a	5,067021	45,823975	JUGET & DUMNICKA (1986), JUGET (1980, 1984)
1b	5,067021	45,823975	Site n°1 in JUGET (1987), site n°9 in GIBERT *et al.*(1977) and in DOLE (1983)
1c	5,067021	45,823975	Site n°1 in JUGET (1987), site n°9 in GIBERT *et al.*(1977) and in DOLE (1983), JUGET (1980, 1984)
1d	5,067021	45,823975	
1e	5,077080	45,814385	JUGET (1987)
1f	5,067021	45,823975	Site n°7 in GIBERT *et al.*(1977), SEYED-REIHANI *et al.*(1982)
2a	5,134910	45,827800	Site n°5 in JUGET (1987), site n°10 in DOLE (1983), REYGROBELLET & DOLE (1982), JUGET (1980, 1984)
2b	5,134910	45,827800	Site n°5 in JUGET (1987), site n°10 in DOLE (1983), JUGET (1984)
2c	5,134910	45,827800	Site n°5 in JUGET (1987), site n°10 in DOLE (1983), JUGET (1984)
3	5,113194	45,833197	MARMONIER *et al.*(1992)
4	5,113194	45,833197	MARMONIER *et al.*(2000)
5	5,120564	45,820671	JUGET (1987)
6a	4,840000	45,758149	JUGET (1980), JUGET & DUMNICKA (1986)
6b	4,840000	45,758149	JUGET (1980, 1984, 1987)
6c			GIBERT *et al.*(1977), LAFONT & DURBEC (1990), LAFONT (1992)
6d			MARMONIER (1988)
7	5,374186	46,092957	JUGET & LAFONT (1979), JUGET (1980, 1984, 1987)
8	5,407850	45,920522	JUGET (1980, 1984, 1987)
9	5,409770	45,969800	JUGET & DUMNICKA (1986)
10	5,418143	46,092215	JUGET & CREUZE DES CHATELIERS (2001)
11	5,480993	46,251210	JUGET (1959), GINET (1961)
12	5,588124	46,273848	JUGET & DUMNICKA (1986)
13			CASTELLARINI *et al.*(2005) (Area too large to give appropriate coordinates)
Ardennes			
14a	4,539949	49,837941	CERNOSVITOV (1936)
14b	4,665350	49,968091	HUSSON (1936)
Ariège			
15	1,041580	42,950400	ROUTE *et al.*(2004)
16	1,024160	42,956000	ROUTE *et al.*(2004)
17	-1,023700	42,950200	GIANI (1976)
18	-0,884700	42,900100	GIANI (1976)
19	1,021021	42,968923	MAGNIEZ (1968)
20a	1,038077	42,999230	JEANNEL (1920)
20b	1,038077	42,999230	HRABE (1958)
21a	1,031738	43,035989	JEANNEL & RACOVITZA (1914)
21b	1,031738	43,035989	HRABE (1958)
22	1,100609	42,937080	MESTROV (1962)
23	1,100609	42,937080	JEANNEL & RACOVITZA (1929), HRABE (1958)
24	1,119738	43,044663	OMODEO (1961)
25	1,180792	42,932137	BOU & BOUILLON (1965)
26a	1,544535	43,017652	RODRIGUEZ & GIANI (1989), ERSEUS *et al.*(1992)
26b	1,544535	43,017652	RODRIGUEZ & GIANI (1987)
27	1,849481	42,932785	COGNETTI DE MARTIIS (1904)
Aveyron			
28	1,874575	44,455560	GIANI *et al.*(2001)
29	1,907078	44,309560	SAMBUGAR *et al.*(1999), GIANI *et al.*(2001)
30a	2,239654	44,529973	GIANI (1979)
30b	2,239654	44,529973	GIANI & LAFONT (1981)
31	2,762610	44,091977	GIANI (1976)
32	2,662708	44,399847	GIANI (1984)
33	2,810496	43,925899	GIANI *et al.*(2001)
34	2,855540	43,954912	GIANI *et al.*(1990)
35	3,303557	44,174398	BREHIER (1998)
36	1,932240	44,299500	RODRIGUEZ & GIANI (1994)
Bas-Rhin			
37	7,733445	48,522475	HERTZOG (1932)
38	7,733445	48,522475	MOSZINSKY (1938)
39	7,757194	48,568245	HERTZOG (1932)
40a	7,757194	48,568245	MOSZINSKY (1938)
40b	7,757194	48,568245	MOSZINSKY (1938)
41	7,757194	48,568245	HERTZOG (1932)
42	7,757194	48,568245	DODERLEIN (1898)
Cantal			
43a	2,801010	45,018700	GIANI & RODRIGUEZ (1994)
43b	2,801010	45,018700	RODRIGUEZ & GIANI (1994)
Corrèze			
44	1,929551	45,099329	GIANI & LAFONT (1981)
45	2,490438	45,392337	GIANI & LAFONT (1981)
Corse			
46	9,213793	41,794409	GIANI & RODRIGUEZ (1994), RODRIGUEZ & GIANI (1994)
Côte-d'Or			
47	5,075099	47,406789	JUGET & DUMNICKA (1986)
48	4,146607	47,465965	TETRY (1938)
Dordogne			
49	0,886777	44,882643	LAFONT (1982, 1989)
50a	0,978048	44,820963	LAFONT (1982)
50b	0,978048	44,820963	LAFONT (1989)
51	1,103957	45,157999	GIANI *et al.*(2001)
52a	1,204190	44,806100	LAFONT (1982)
52b	1,203708	44,806270	LAFONT (1989)
53	1,294810	44,818700	GIANI *et al.*(2001)
54	1,430728	44,884976	LAFONT (1982)
55a	1,430728	44,884976	LAFONT (1982)
55b	1,430728	44,884976	LAFONT (1982), LAFONT (1989)
Doubs			
56	6,251125	46,899649	VANDEL (1920a)
57	6,290429	47,038820	GIANI (1979), LAFONT (1989)
58	6,353140	47,348755	LAFONT (1989)

59	6,389133	46,915120	VANDEL (1920a)
60	6,389133	46,915120	VANDEL (1920a)
61	6,412175	46,759354	VANDEL (1920a)
62	6,389133	46,915120	VANDEL (1920a)
63	6,389133	46,915120	VANDEL (1920a)
64	6,389133	46,915120	VANDEL (1920a)
65	6,389133	46,915120	VANDEL (1920a)
66	6,389133	46,915120	VANDEL (1920a)
67	6,446469	47,321603	LAFONT (1989)
Drôme			
68	4,979668	44,757654	PITZALIS & JUBERTHIE (1995)
Essone			
69	2,111255	48,674933	VANDEL (1920b)
Gard			
71	3,483343	44,106566	COGNETTI DE MARTIIS (1902, 1904), WOLF (1934) in LAGARRIGUE (1950), LAGARRIGUE (1950)
72	3,483343	44,106566	GIANI (1979)
73	3,483343	44,106566	GIANI & RODRIGUEZ (1994), RODRIGUEZ & GIANI (1994)
74	4,018625	44,355502	GIANI *et al.*(2001)
75	4,279882	44,120257	GIANI *et al.*(2001)
Haute-Garonne			
76	0,905413	42,993494	MESTROV (1962), LESCHER-MOUTOUE (1973)
Haute-Saône			
77	6,688957	47,826194	REMY (1926, 1932a)
78	6,780126	47,788975	JOUIN (1973)
Hautes-Pyrénées			
79	0,408965	42,960541	GIANI (1979)
80	0,086589	42,978060	COGNETTI DE MARTIIS (1902, 1904)
81	0,463139	42,987563	JUBERTHIE & MESTROV (1965a)
82	0,463139	42,987563	GIANI (1979)
83	0,469303	43,080678	ERSEUS *et al.*(1992)
84	0,408965	42,960541	GIANI (1979)
177			GIANI & LAVANDIER (1977), GIANI (1979)
Haut-Rhin			
85	7,103178	47,904418	MOSZINSKY (1938)
Hérault			
86	3,867864	43,766001	MALARD *et al.*(1994)
87	3,867864	43,766001	MALARD *et al.*(1994)
Ille-et-Vilaine			
88	-1,695893	48,339178	PESSON (1935)
Isère			
89	5,111440	45,811400	Site n°2 in GIBERT *et al.*(1977), parapotamon upstream in JUGET (1984), site n°3 in JUGET (1987), JUGET (1980)
90	5,151420	45,805400	Site n°8 in GIBERT *et al.*(1977) in REYGROBELLET & DOLE (1982) and in DOLE (1983), site n°6 in JUGET (1987)
91	5,323654	45,843107	JUGET (1959), GINET (1961)
Jura			
92	5,402118	46,406438	JUGET & DUMNICKA (1986)
93	5,608509	46,440301	JUGET & DUMNICKA (1986)
94a	5,730740	46,822590	VANDEL (1920a)
94b	5,730740	46,822590	VANDEL (1920a)
Landes			
95	-1,255675	44,086217	DELAMARE DEBOUTTEVILLE (1954)
Loire			
95	4,199240	45,684700	PARAN *et al.*(2005)
Lot			
96	1,758735	44,854348	COGNETTI DE MARTIIS (1902, 1904), VIRE (1902, 1904)
Maine-et-Loire			
97	-0,206706	47,662196	BEAUCOURNU & MATILE (1963)
Mayenne			
98	-0,362847	48,008831	BEAUCOURNU & MATILE (1963)
99	-0,362847	48,008831	BEAUCOURNU & MATILE (1963)
100	-0,234544	48,192713	BEAUCOURNU & MATILE (1963)
Meurthe-et-Moselle			
101	6,062677	48,872619	MOSZINSKY (1938), TÉTRY (1938)
102	6,129440	48,817500	CERNOSVITOV (1941)
103	6,129440	48,817500	CERNOSVITOV (1941)
104	5,828739	49,529496	TÉTRY (1938)
105	5,765952	49,520059	TÉTRY (1938)
106	5,765952	49,520059	TÉTRY (1938)
107	5,765952	49,520059	TÉTRY (1938)
108	5,765952	49,520059	TÉTRY (1938)
109	5,785625	49,545571	TÉTRY (1938)
110	5,955132	48,641095	CERNOSVITOV (1931), TÉTRY (1938)
111	5,975993	49,211290	CERNOSVITOV (1936)
112	6,019695	48,643804	TÉTRY (1938)
113	6,069483	48,609229	TÉTRY (1938)
114	6,080202	48,750821	TÉTRY (1938)
115	6,086401	48,601999	TÉTRY (1938)
116	6,094143	48,789298	TÉTRY (1938)
117	6,125715	48,718107	TÉTRY (1938)
118	6,143208	48,706298	TÉTRY (1938)
119a	6,143208	48,706298	CERNOSVITOV (1936)
119b	6,143208	48,706298	TÉTRY (1938)
120a	6,167738	48,790099	CERNOSVITOV (1936)
120b	6,143765	48,788170	TÉTRY (1938)
121	6,163350	48,758295	TÉTRY (1938)
122	6,173047	48,686888	TÉTRY (1938)
123	6,173047	48,686888	TÉTRY (1938)
124	6,173047	48,686888	TÉTRY (1938)
125	6,176146	48,618391	TÉTRY (1938)
126	6,201323	48,793062	TÉTRY (1938)
127	6,193433	48,751022	BRUNOTTE (1892)
128	6,193881	48,720411	TÉTRY (1938)
130	7,024409	48,494185	JOUIN (1973)
132	7,024409	48,494185	JOUIN (1973)
133	7,101935	48,512248	JOUIN (1973)
Morbihan			
134	-2,140241	47,739457	BEAUCOURNU & MATILE (1963)
Moselle			
135	5,916421	49,489613	TÉTRY (1938)
136	5,947790	49,415841	TÉTRY (1938)
137	6,033066	49,250918	TÉTRY (1938)
138	6,046334	49,387215	TÉTRY (1938)
139	6,063596	49,330922	TÉTRY (1938)
140	6,079473	49,234824	TÉTRY (1938)
141	6,121424	49,368688	TÉTRY (1938)
142	6,121424	49,368688	TÉTRY (1938)
143	6,121424	49,368688	TÉTRY (1938)
144	6,121424	49,368688	TÉTRY (1938)
145	6,121424	49,368688	TÉTRY (1938)

146	6,002903	49,434859	TÉTRY (1938)
147			CERNOSVITOV (1941)
148	7,051840	48,574146	PICARD (1962)
Nord			
149	3,072578	50,623936	MONIEZ (1888)
150			
151			
152			
153			
154			
155	3,072578	50,623936	MONIEZ (1888), VEJDOVSKY (1889)
156	3,106191	50,379693	MONIEZ (1888)
157	3,106191	50,379693	GIARD (1888)
158	3,124500	50,607918	MONIEZ (1888)
159	3,162278	50,718901	GIARD (1882)
Orne			
70	0,567840	48,518987	FAUVEL (1903)
Pas-de-Calais			
160	1,616660	50,772470	GIARD (1894)
161	2,269350	50,769614	MONIEZ (1888)
Pyrénées-Orientales			
162	2,364573	42,596195	BERTRAND (1974, 1975)
163	2,864250	42,882744	DELAY (1972)
164	2,864250	42,882744	BERTRAND (1974, 1975()
165	3,003780	42,696040	DELAMARE DEBOUTTEVILLE (1954)
166	3,103702	42,472661	VANDEL (1922)
Rhône			
167			LAFONT & DURBEC (1990)
168	4,842927	45,822444	JUGET & CREUZE DES CHATELIERS (2001)
Somme			
169	1,519652	50,176551	MONIEZ (1888)
Tarn			
170	1,725492	44,078952	BOU (1966)
Tarn-et-Garonne			
171	1,746356	44,290825	BOU (1966)
Ville-de-Paris			
172	2,335186	48,862551	COGNETTI DE MARTIIS (1902, 1904)
Vosges			
173	6,517448	47,940542	MOSZINSKY (1938)
174	6,868813	48,403001	TÉTRY (1938)
176	7,015999	48,468402	PICARD (1962)
Unknown departement			
178			GINET (1961)
179			JUBERTHIE & GINET (1994)
180			HUSSON (1936)
181			JUGET in MARTINEZ-ANSEMIL *et al.*(2002)

of the country. It is therefore likely that a few studies are sufficient to account for almost all the superficial species which can be found in ground waters. Records of known Oligochaeta and Polychaeta stygoxen species seems to have reached a new threshold (Fig. 3) while the cumulative curves of stygophilous and stygobiont species are not reaching a threshold yet. Therefore, it is likely that in the future more species will be recorded in France, and the map of endemicity will probably have to be reconsidered in the light of new findings.

Bibliography

BEAUCOURNU, J.C. & MATILE, L., 1963. Contribution à l'inventaire faunistique des cavités souterraines de l'Ouest de la France. 3. Liste des espèces ; bibliographie. *Annales de Spéléologie*, 18(4): 519-531.

BERTRAND, J.Y., 1973. Recherches sur les eaux souterraines -20- Sur le peuplement des eaux souterraines des karsts du Languedoc et des Corbières. *Annales de Spéléologie.*, 28(4): 675-684.

BERTRAND, J.Y., 1974. Recherches sur l'écologie de *Faucheria faucheri* (Crustacés, Cirolanides). Thèse doct. 3e cycle, Paris, 123p.

BERTRAND, J.Y., 1975. Recherches sur les eaux souterraines -27- Etude d'un aquifère épikarstique des Corbières (Opoul, Pyrénées-Orientales). *Annales de Spéléologie.*, 30(3): 513-537.

BOU, C., 1966. Faune souterraine du Sud-Ouest du Massif Central. I. Contribution à la connaissance des Invertébrés cavernicoles. *Annales de Spéléologie.*, 21(3): 689-706.

BOU C. & BOUILLON M. 1965. Sur quelques cavités du Massif de Sourroque, commune de St-Giron (Ariège). *Annales de Spéléologie.*, 20(1): 55-63.

BRÉHIER, F., 1998. La faune souterraine du parc naturel régional des Grands Causses. *Mémoires de Biospéologie*, 25: 195-316.

BUNKE VON, D., 1967. Zur Morphologie und Systematik der Aeolosomatidae Beddard 1895 und Potamodrilidae nov. fam. (Oligochaeta). *Zoologische Jahrbücher (Systematik)* 94 (23): 187-368.

BRUNOTTE, C., 1892. Deux stations nouvelles du *Pheoryctes menkeanus* (Hoffineister). *Revue de Biologie du Nord de la France*, 5: 120-122.

CASTELLARINI, F., DOLE-OLIVIER, M.J., MALARD, F. & GIBERT, J., 2004. Improving the assessment of groundwater biodiversity by exploring environmental heterogeneity at a regional scale. In GIBERT J. (Editor), *Proceedings of the Symposium on World Subterranean Biodiversity*. Villeurbanne, France, pp 83-88.

ERNOSVITOV, L., 1931. Note sur les Oligochètes des caves de Sainte-Reine près de Toul. *Archives de Zoologie Expériementale, Notes et Revues*,□71(2): 62-66.

ERNOSVITOV, L., 1936. Oligochètes des caves artificielles du Nord-Est de la France. *Archives de Zoologie Expériementale, Notes et Revues*, 78(1): 1-7.

ERNOSVITOV, L., 1939. Etudes biospéologiques. X. Catalogue des Oligochètes hypogés. *Bulletin du Muséum Royal D'Histoire Naturelle de Belgique*, 15(22): 1-92.

ERNOSVITOV, L., 1941. Oligochaeta from various part of the World. *Proceedings of the Zoological Society of London, ser. B.*, 111: 197-236.

COGNETTI DE MARTIIS, L., 1902. Contributo a la conoscenza degli Oligocheti cavernicoli. *Archivio Zoologico Italiano*, 51: 371.

COGNETTI DE MARTIIS, L., 1904. Gli Oligocheti cavernicoli. *Rivista italiana di Spéologia*, 2: 2-7.

DELAMARE DEBOUTTEVILLE, C., 1954. Eaux souterraines littorales de la côte catalane française (Mise au point faunistique). *Vie et Milieu*, 5: 408-451.

DELAMARE DEBOUTTEVILLE, C., GERLACH, S. & SIEWING, R., 1954. Recherches sur la faune des eaux souterraines littorales du Golfe de Gascogne. Littoral des Landes. *Vie et Milieu*, 5: 373-407.

DELAY, B., 1970. Données sur l'écologie, l'anatomie et la biologie d'*Haplotaxis* (*Pelodrilus*) *leruthi* (Hrab?) (Oligochète, Haplotaxidae). *Annales de Spéléologie*, 25(3): 621-649.

DELAY, B., 1972. Un nouvel oligochète Haplotaxidae souterrain des Pyrénées Orientales (France)□: *Haplotaxis corbarensis* n. sp. *Annales de Spéléologie.*, 27(2): 329-340.

DÖDERLEIN, L., 1898. Die Thierwelt von Elsass-Lothringen. *Das Reichsland Elsass-Lothringen*, 1: 61-81.

DOLE, M.J., 1983. Le domaine aquatique souterrain de la plaine alluviale du Rhône à l'est de Lyon. I : diversité hydrologique et biocénotique de trois stations représentatives de la dynamique fluviale. *Vie et Milieu*, 33(3/4): 219-229.

DOLE-OLIVIER, M.J., MARMONIER, P., CREUZÉ DES CHÂTELLIERS, M. & MARTIN, D. , 1994. Interstitial fauna associated with the alluvial floodplains of the Rhône River (France). In GIBERT, J., DANIELOPOL, D.L. and STANFORD, J.A. (Editors), Groundwater Ecology. Academic Press, Inc. pp 313-347.

ERSÉUS, C., GIANI, N. & RODRIGUEZ, P., 1992. The taxonomy of *Spiridion* Knöllner (Oligochaeta, Tubificidae), with a redescription of *Spiridion phreaticola* (Juget 1987) comb.n. *Stygologia*, 7(2): 77-83.

FAUVEL, P., 1903. Un nouvel Oligochète des puits (*Trichodriloïdes intermedius*, n. gen. n. sp.) *Comptes rendus de l'Association française pour l'Avancement des Sciences*, 32(1): 221-221.

GIANI, N., 1976. Les Oligochètes aquatiques du Sud-Ouest de la France. *Annales de Limnologie*, 12(2): 107-125.

GIANI, N., 1979. Les Oligochètes aquatiques du Sud-Ouest de la France (2e note). *Bulletin de la Société d' Histoire naturelle de Toulouse*, 115(3/4): 347-358.

GIANI, N., 1984. Contribution à l'étude de la faune aquatique et plus particulièrement des Oligochètes. II. Les Oligochètes aquatiques : taxonomie, répartition et écologie. Thèse Doctorat d'Etat, Toulouse III, 196p + annexes.

GIANI, N., ERSÉUS C. & MARTINEZ-ANSEMIL, E., 1990. A redefinition of the subterranean genus *Krenedrilus* Dumnicka (Oligochaeta, Tubificidae) with a redescription of *K. papillatus* Dumnicka, 1983 and the description of two new species. *Stygologia*, 5(1): 55-65.

GIANI N. & LAFONT M. 1981. Sur la présence en France de *Rhyacodrilus carsticus* Kosel. *Bulletin de la Société d'Histoire naturelle de Toulouse*, 117(1/4): 207-210.

GIANI, N. & LAVANDIER , P., 1977. Les Oligochètes du torrent d'Estaragne (Pyrénées centrales). *Bulletin de la Société d'Histoire naturelle de Toulouse*, 113: 234-243.

GIANI, N. & RODRIGUEZ, P., 1994. New species of the genus *Trichodrilus* (Oligochaeta, Lumbriculidae). *Zoologia Scripta*, 23(1): 33-41.

GIANI, N., SAMBUGAR, B., RODRIGUEZ, P. & MARTINEZ-ANSEMIL, E., 2001. Oligochaetes in southern European groundwater. New records and an overview. *Hydrobiologia*, 463: 65-74.

GIARD, A., 1882. Sur le *Crenothrix kubniana* cause de l'infection ces eaux de Lille. *Comptes Rendus de l'Académie des Sciences*, 31 juillet 1882.

GIARD, A., 1888. Sur une nouvelle station de *Phreoryctes menkeanus* Hoff (Eaux de source de Douai). *Bulletin des Sciences de France et Belgique*, 19.

GIARD, A., 1889. Sur l'habitat du *Pheoryctes menkeanus* Hoffm. *Bulletin des Sciences de France et Belgique*, 20.

GIARD, A., 1894. Sur un nouveau ver de terre de la famille des Phreoryctidae (*Phreoryctes endeka* Gd.) *Comptes Rendus de la Société de Biologie* XLVI, 310-312 and *Comptes Rendus de l'Académie des Sciences*, CXVIII: 811-814.

GIBERT, J., GINET, R., MATHIEU, J., REYGROBELET, J.L. & SEYED-REIHANI, A., 1977. Structure et fonctionnement des écosystèmes du Haut-Rhône français. IV. Le peuplement des eaux phréatiques; premiers résultats. *Annales de Limnologie*, 13(1): 83-97.

GINET, R., 1961. Faune cavernicole du Jura Méridional et des chaînes subalpines dauphinoises. II. Contribution à la connaissance des Invertébrés. *Annales de Spéléologie*, 16: 303-325.

HESSE, E., 1923. Sur l'habitat d'*Haplotaxis gordioides* G. L. Hartmann. *Bulletin de la Société Zoologique de France*, 48: 138-139.

HERTZOG, L., 1932. Notes sur quelques Crustacées nouveaux pour la plaine d'Alsace (Bas-Rhin). *Bulletin de l'Association Philomatique d'Alsace Lorraine*. 7: 363-364.

HRABE, S., 1937. Etudes biospéologiques. V. Contribution à l'étude du genre *Trichodrilus* (Oligochaeta, Lumbriculidae) et description de deux espèces nouvelles. *Bulletin du Muséum Royal D'Histoire Naturelle de Belgique*, 13 (32): 1-23.

HRABE, S., 1958. A new species of Oligochaeta from the South-West of France. *Pelodrilus leruthi* n. sp. *Notes Biospéologiques*, 13: 171-178.

HUSSON, R., 1936. Contribution à l'étude de la faune des cavités souterraines artificielles. *Annales des Sciences Naturelles, série Zoologie*, 19: 6-30.

HUSSON, R., 1938. La faune des galeries de mines de l'est de la France. *Compte Rendu du Premier Congrès Lorrain des Sociétés Savantes de l'Est de la France*, Nancy, 6-8 juin 1938, 1-6.

JEANNEL, R., 1926. *Faune cavernicole de la France*. Encyclopédie entomologique, Lechevalier (ed), Paris, 334p.

JEANNEL, R. & RACOVITZA, E.G., 1914. Enumération des grottes visitées (Cinquième série) *Biospeologica. Archives de Zoologie Expériementale et Générale*, 57: 325-558.

JEANNEL, R. & RACOVITZA, E.G., 1929. Enumération des grottes visitées (Septième série) *Biospeologica. Archives de Zoologie Expériementale et Générale*, 68: 293-608.

JOUIN, C., 1973. Nouvelles données sur *Troglochaetus beranecki* Delachaux (Archiannelida Nerillidae). *Annales de Speleologie*, 28(4): 575-579.

JUBERTHIE, C. & GINET, R., 1994. France. In JUBERTHIE, I.C. and DECU, V. (Editors), Encyclopaedia Biospeologica. Société de Biospéologie, pp 665-692.

JUBERTHIE, C. & MESTROV, M., 1965a. Sur les Oligochètes terrestres des sédiments argileux des grottes. *Annales de Spéléologie.*, 20(2): 209-236.

JUBERTHIE, C. & MESTROV, M., 1965b. Survie de *Pelodrilus leruthi* Hrabe (Oligochète, Haplotaxidae) dans les grottes en période de sécheresse. *Annales de Spéléologie*, 20(4): 183-188.

JUGET, J., 1959. Recherches sur la faune aquatique de deux grottes du Jura Méridional Français□: La grotte de la Balme (Isère) et la grotte de Corveisat (Ain). *Annales de Spéléologie*, 14: 391-401.

JUGET, J., 1980. Aquatic Oligochaeta of the Rhône-Alps area: current research priority. In BRINKHURST, R. and COOK, D.G. (Editors), Aquatic Oligochaete Biology. Plenum Publishing corporation, pp 241-251

JUGET, J., 1984. Oligochaeta of the epigean and underground fauna of the alluvial plain of the french upper Rhône (biotypological trial). *Hydrobiologia*, 115: 175-182.

JUGET, J., 1987. Contribution to the study of the Rhyacodrilinae (Tubificidae, Oligochaeta), with description of two new stygobiont species from the alluvial plain of the French upper Rhône, *Rhyacodrilus amphigenus*, sp. n. and *Rhizodriloides phreaticola*, g. n., sp. n. *Hydrobiologia*, 155: 107-118.

JUGET, J. & CREUZÉ DES CHÂTELIERS, M., 2001. Taxonomical survey of some stygobiont oligochaeta from the eastern part of France including description of a new species. *Hydrobiologia*, 463: 23-28.

JUGET, J. & DUMNICKA, E., 1986. Oligochaeta (incl. Aphanoneura) des eaux souterraines continentales. In BOTOSANEANU L. (Editor) , Stygofauna Mundi. E. J. Brill/ Dr W. Backhuys, Leiden, pp 234-244

JUGET, J. & LAFONT, M., 1979. Description de *Peloscolex turquini* n. sp. et redescription de *Peloscolex moszinskii* Kasprzak, 1971 (Tubificidae, Oligochaeta) avec quelques remarques sur la répartition du genre *Peloscolex* dans les eaux douces françaises. *Bulletin de la Société Linnéenne de Lyon*, 48(2): 75-80, 113-118.

LAFONT, M., 1982. Les Oligochètes de la Dordogne. Pages 183-190 in Rapport CEMAGREF, Etude Hydrobiologique de la Dordogne, Bordeaux.

LAFONT, M., 1989. Contribution à la gestion des eaux continentales : utilisation des Oligochètes comme descripteurs de l'état biologique et du degré de pollution des eaux et des sédiments. Thèse d'état, Université de Lyon 1,311p + annexes.

LAFONT, M. & DURBEC, A., 1990. Essai de description biologique des interactions entre eau de surface et eau souterraine : vulnérabilité d'un aquifère à la pollution d'un fleuve. *Annales de Limnologie*, 26(2-3): 119-129.

LAFONT, M., DURBEC, A. & ILLE, C., 1992. Oligochaetes worms as biological describers of the interactions between surface and groundwaters: a first synthesis. *Regulated Rivers*, 7: 65-73.

LAGARRIGUE, J., 1950. La faune cavernicole terrestre de la région des causses. *Bulletin de la Société d'Hisoire naturelle de Toulouse*, 85: 129-150.

LEBRETON, B., 1986. Faune souterraine du département du Lot : mise au point bibliographique. In Recherches sur les Karsts du Quercy et du Sud-Ouest de la France. pp 73-77

LESCHER-MOUTOUÉ, F., 1973. Sur la biologie et l'écologie des Copépodes Cylopides hypogés (Crustacés). *Annales de Spéléologie.*, 28(3-4): 429-674.

MAGNIEZ, G., 1968. Les stations de *Stenasellus virei* Dollfus (Crustacé-Isopode-Troglobie). *Sous le Plancher*, 7(1 à 3), 1-40.

MALARD, F., REYGROBELLET, J.L., MATHIEU, J. & LAFONT, M., 1994. The use of invertebrate communities to describe groundwater flow and contaminant transport in a fractured rock aquifer. *Archiv fur Hydrobiologie* ,131(1): 93-110.

MARMONIER, P., DOLE-OLIVIER, M.J. & CREUZÉ DES CHÂTELLIERS, M., 1992. Spatial distribution of interstitial assemblages in the floodplain of the Rhône River. *Regulated Rivers*, 7: 75-82.

MARMONIER, P., CLARET, C. & DOLE-OLIVIER, M.J., 2000. Interstitial fauna in newly-created floodplain canals of a large regulated river. *Regulated Rivers*, 16: 23-36.

MARTINEZ-ANSEMIL, E., SAMBUGAR, B. & GIANI, N., 2002. First record of Parvidrilidae (Annelida, Oligochaeta) in Europe with a description of a new species (*Parvidrilus spelaeus* sp. nov) and comments on the family and its phyletic relationships. *Journal of Zoology, London*, 256: 495-503.

MESTROV, M., 1962. Milieu d'origine de quelques espèces aquatiques souterraines. *Spelunca*, 2 : 84-88.

MONIEZ, R., 1888. Faune des eaux souterraines du département du Nord and en particulier de la ville de Lille. *Revue Biologique du Nord de la France*, 4: 142-153.

MOSZINSKY, A., 1938. Oligochètes de biotopes hypogés de la vallée du Rhin, d'Alsace and des régions limitrophes. *Archives de Zoologie Expérimentale et Générale*, 80(1): 1-10.

OMODEO P. 1961. Oligocheti della Francia meridionale e di localita limitrofe. *Bollettino del Museo Civico di Storia Naturale di Verona* , 9: 67-95.

PARAN, F., MALARD, F., MATHIEU, J., LAFONT, M., GALASSI, D. M. P. & MARMONIER, P., 2004. –Distribution of groundwater invertebrates along an environmental gradient in a shallow water-table aquifer. In GIBERT J. (Editor), *Proceedings of the Symposium on World Subterranean Biodiversity*. Villeurbanne, France, pp 99-106.

PESSON, P., 1935. Note de faunistique armoricaine (2ème note). *Bulletin de la Société des Sciences de Bretagne*, 12: 190-197.

PICARD, J.Y., 1962. Contribution à la connaissance de la faune psammique de la Lorraine. *Vie et Milieu*. 13: 471-505.

PITZALIS, A. & JUBERTHIE, C., 1995. Etude de la faune interstitielle de la réserve naturelle des Ramières du Val de Drôme. *Mémoires de Biospéologie I.*, 22: 243-246.

RACOVITZA, E. G., 1907. Essai sur les problèmes biospéologiques. *Archives de Zoologie Expérimentale et Générale*, 6: 371-488.

RÉMY, P., 1926. Sur la faune aquatique des fissures du sol. *Bulletin de la Société Linnéenne de Lyon* 5: 70-71.

RÉMY, P., 1932a. Trois espèces intéressantes de la faune vosgienne. *Bulletin de la Socité d'Histoire Naturelle de Moselle*, 4(9): 47-54.

RÉMY, P., 1932b. Contribution à l'étude de la faune cavernicole de Lorraine. Les caves de Sainte-Reine. *Bulletin de la Socité d'Histoire Naturelle de Moselle*, 33: 55-71.

RÉMY, P., 1943. Notes faunistiques. I. Vers et Mollusques. *Bulletin Société Linnéenne de Lyon*, 12(9): 139-142.

REYGROBELLET, J.L. & DOLE, M.J., 1982. Strucutre et fonctionnement des écosystèmes du Haut-Rhône français, 19 Connaissance des milieux intertitiels régionaux (2) : extension à la Lône du Grand Gravier. *Polskie Archiwum Hydrobiologii*, 29: 458-500.

RODRIGUEZ, P. & GIANI, N., 1987. Sur deux espèces de Lumbriculidae (Oligochaeta) cavernicoles : *Cookidrilus speluncaeus* n. gen., n. sp. et *Trichodrilus diversisetosus* Rodriguez 1986. *Bulletin de la Société d'Histoire Naturelle de Toulouse*, 123: 45-49.

RODRIGUEZ, P. & GIANI, N., 1989. New species of *Phallodrilus* (Oligochaeta, Tubificida) from caves of northern Spain and southwestern France. *Hydrobiologia*, 180: 57-63.

RODRIGUEZ, P. & GIANI, N., 1994. A preliminary review of the taxonomic characters used for the systematics of the genus *Trichodrilus* Claparède (Oligochaeta, Lumbriculidae). *Hydrobiologia*, 278: 35-51.

ROUTE, N., MARTINEZ-ANSEMIL, E., SAMBUGAR, B. & GIANI, N., 2004. On some interesting freshwater Annelida, mainly Oligochaeta, of the underground waters of southwestern France with the description of a new species. *Subterranean biology*, 2: 1-5.

SAMBUGAR, B., GIANI, N., & MArtinez-ANSEMIL, E., 1999. Groundwater Oligochaetes from Southern-Europe. Tubificidae with marine phyletic affinities: new data with description of a new species, review and consideration on their origin. *Mémoires de Biospéologie*, 26: 107-116.

SAMBUGAR, B., MARTINEZ-ANSEMIL, E. & GIANI, N., 2005 Oligochaetes from springs in southern Europe. *Bollettino del Museo Civico di Storia Naturale di Verona*. 29: 93-106.

SCHMELZ, R.M., 2003. Taxonomy of *Fridericia* (Oligochaeta, Enchytreidae). Revision of species with morphological and biochemical methods. In GOECKE and EVERS (Editors), Adhandlungen des Naturwissenschaftlichen Vereins Hamburg. Keltern-Weiller, Germany. 415p plus annexes.

SEYED-REIHANI, A., GIBERT, J. & GINET, R,. 1982. Structure et fonctionnement des écosystèmes du Haut-Rhône français. XXIII Ecologie de deux stations interstitielles ; influence de la pluviosité sur leur peuplement. *Polskie Archiwum Hydrobiologii,* 29(2): 501-511.

STOCH, F., (2001) Mapping subterranean biodiversity: structure of the database, mapping software (CKMAP), and a report of status for Italy. In CULVER, D.C., DEHARVENG, L., GIBERT, J. and SASOWSKY, I.D. (Editors), *Proceedings of the Mapping Subterrenean Biodiversity workshop*. Moulis, France, pp 29-32.

TÉTRY, A., 1938. Contribution à l'étude de la faune de l'Est de la France (Lorraine). Thèse, Nancy, 453 p.

VANDEL, A., 1920a. Contribution à la connaissance de la faune des eaux douces du Jura. II. Les sources et le fond des lacs. *Bulletin de la Société Zoologique de France*, 45: 44-57

VANDEL, A., 1920b. Sur la faune des sources. *Bulletin de la Société Zoologique de France*, 45: 177-183.

VANDEL, A., 1922. Sur la faune d'eau douce des Pyrénées-Orientales. *Bulletin de la Société Zoologique de France*, 47: 163-170.

VEJDOVSKY, F., 1989. Sur le *Pachydrilus subterraneus* nov. sp. *Revue Biologique du Nord de la France*, 121-122

VIRÉ, A., 1902. La faune et la flore souterraine du puits de Padirac (Lot). *Bulletin du Muséum de Paris*, 7: 601-607.

VIRÉ, A., 1904. La faune souterraine du puits de Padirac. *Comptes Rendus de l'Académie des Sciences*, 138: 820-828.

WOLF, B., 1934. *Animalium cavernarum catalogus*. I. W. Junk, S'Gravenhage, 108p.

The authors dedicate, with great respect, this paper to the memory of the late Jacques JUGET who has contributed much to the knowledge of the underground freshwater oligochaete fauna of France.

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