Scientific text

- **Summarizing a Scientific Text:**

Summarizing a short scientific text in one paragraph;

A summary is a shortened version of a longer piece of writing.

It captures all the most important parts (main ideas) of the original,

but expresses them in a shorter way.

Then, it should be expressed--as far as possible--in your own words.

Scientific text

- **Summarizing a Scientific Text:**

To have a coherent summary of a scientific text, you should follow some reading strategies;

Reading strategies :

- ✓ Read the original quickly, and try to understand its main subject or purpose.
- ✓ Read it again to understand it in more detail, identify keywords and highlight the essential information.
- ✓ Look up any technical words or concepts you don’t know.

Scientific text

After a good reading, you should then:

A/ Identifying the main sections:

- Work through the text to identify its main sections. A main section can be made up of one or various paragraphs. (Number each different section.)

- Write a one or two-sentence account of each section you identify.

- Focus your attention on the main point and leave out any illustrative examples.

B/ The starting point:

- Write a sentence which states the central idea of the original text.

- Complete the paragraph by including one or two sentences per main point or important part.

Scientific text

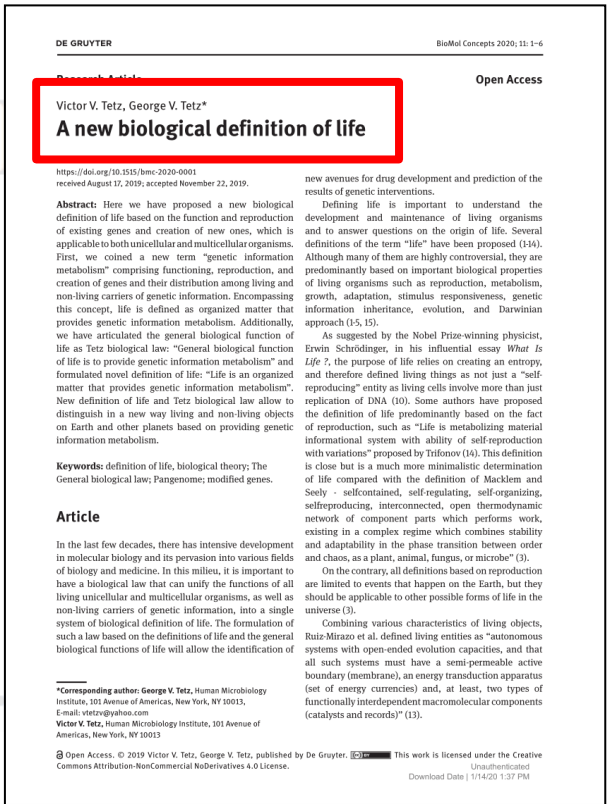
➢ Structure of scientific texts

This type of text has a complex structure that can easily vary according to the subject matter, area and particular needs of the author to present the information.

Let's see the general structure ;

Title of the text

In this first part it is necessary to place the title, which reflects the topic to be presented in the scientific text



DE GRUYTER BioMol Concepts 2020; 11: 1–6

Open Access

Victor V. Tetz, George V. Tetz*

A new biological definition of life

https://doi.org/10.1515/bmc-2020-0001
received August 17, 2019; accepted November 22, 2019.

Abstract: Here we have proposed a new biological definition of life based on the function and reproduction of existing genes and creation of new ones, which is applicable to both unicellular and multicellular organisms. First, we coined a new term "genetic information metabolism" comprising functioning, reproduction, and creation of genes and their distribution among living and non-living carriers of genetic information. Encompassing this concept, life is defined as organized matter that provides genetic information metabolism. Additionally, we have articulated the general biological function of life as Tetz biological law: "General biological function of life is to provide genetic information metabolism" and formulated novel definition of life: "Life is an organized matter that provides genetic information metabolism". New definition of life and Tetz biological law allow to distinguish in a new way living and non-living objects on Earth and other planets based on providing genetic information metabolism.

Keywords: definition of life, biological theory; The General biological law; Pangenome; modified genes.

Article

In the last few decades, there has intensive development in molecular biology and its pervasion into various fields of biology and medicine. In this milieu, it is important to have a biological law that can unify the functions of all living unicellular and multicellular organisms, as well as non-living carriers of genetic information, into a single system of biological definition of life. The formulation of such a law based on the definitions of life and the general biological functions of life will allow the identification of new avenues for drug development and prediction of the results of genetic interventions.

Defining life is important to understand the development and maintenance of living organisms and to answer questions on the origin of life. Several definitions of the term "life" have been proposed (1-14). Although many of them are highly controversial, they are predominantly based on important biological properties of living organisms such as reproduction, metabolism, growth, adaptation, stimulus responsiveness, genetic information inheritance, evolution, and Darwinian approach (1-5, 15).

As suggested by the Nobel Prize-winning physicist, Erwin Schrödinger, in his influential essay *What Is Life ?*, the purpose of life relies on creating an entropy, and therefore defined living things as not just a "self-reproducing" entity as living cells involve more than just replication of DNA (10). Some authors have proposed the definition of life predominantly based on the fact of reproduction, such as "Life is metabolizing material informational system with ability of self-reproduction with variations" proposed by Trifonov (14). This definition is close but is a much more minimalistic determination of life compared with the definition of Macklem and Seely - selfcontained, self-regulating, self-organizing, selfreproducing, interconnected, open thermodynamic network of component parts which performs work, existing in a complex regime which combines stability and adaptability in the phase transition between order and chaos, as a plant, animal, fungus, or microbe" (3).

On the contrary, all definitions based on reproduction are limited to events that happen on the Earth, but they should be applicable to other possible forms of life in the universe (3).

Combining various characteristics of living objects, Ruiz-Mirazo et al. defined living entities as "autonomous systems with open-ended evolution capacities, and that all such systems must have a semi-permeable active boundary (membrane), an energy transduction apparatus (set of energy currencies) and, at least, two types of functionally interdependent macromolecular components (catalysts and records)" (13).

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Victor V. Tetz, Human Microbiology Institute, 101 Avenue of Americas, New York, NY 10013

Scientific text

Let's see the general structure ;

Abstract

This provides a summary of the article.

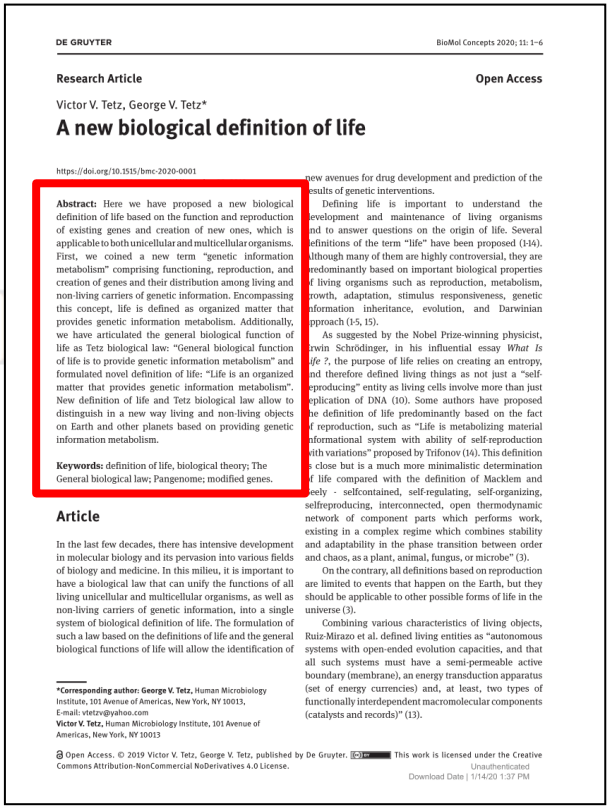
- Usually 150-250 words long,
- Preferably written in one paragraph ,
- Covers the following about the article:

➢ The problem /issue/question addressed by the article

➢ Method(s) used

➢ The main results

➢ The main conclusions



DE GRUYTER BioMol Concepts 2020; 11: 1–6

Research Article Open Access

Victor V. Tetz, George V. Tetz*

A new biological definition of life

https://doi.org/10.1515/bmc-2020-0001

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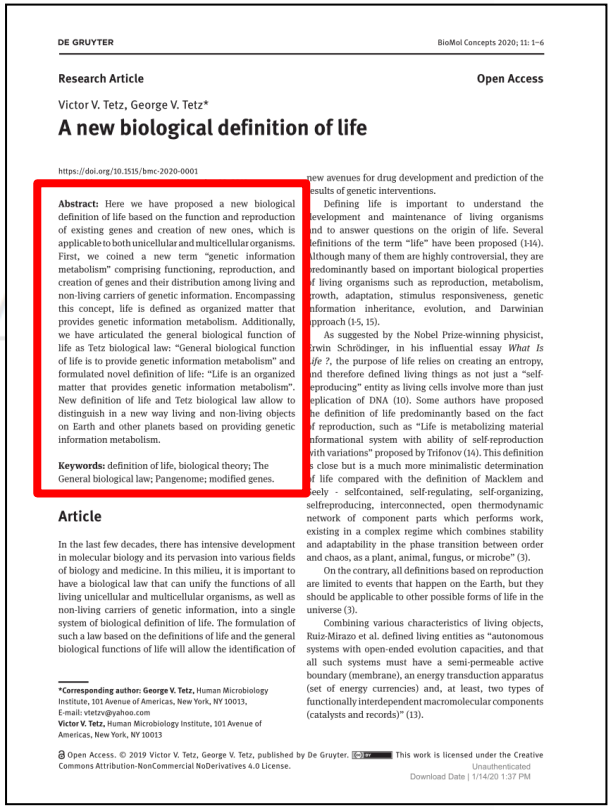
Scientific text

Let’s see the general structure ;

Abstract

An abstract should not contain

- lengthy background information,
- references to other literature,
- elliptical (i.e., ending with ...) or incomplete sentences,
- abbreviations or terms that may be confusing to readers,
- any sort of illustration, figure, or table, or references to them.



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Scientific text

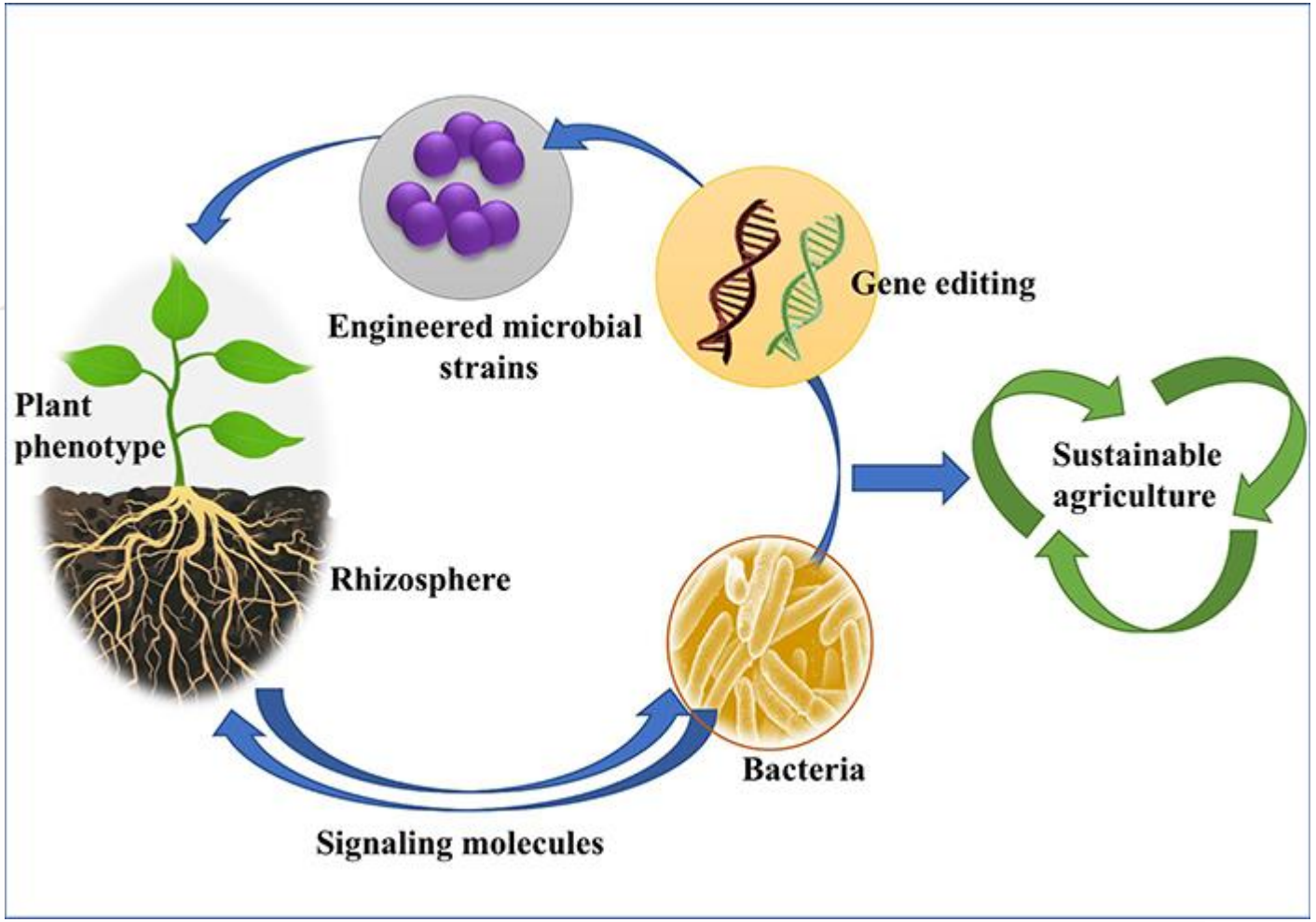
Abstract

Three soil types with different physicochemical properties were selected to evaluate their effect on lead and cadmium bioavailability and toxicity in the land snail *Helix aspersa*.

In 28-day ecotoxicity tests, *H. aspersa* juveniles were exposed to increasing concentrations of Pb or Cd. EC50s, concentrations reducing snail growth by 50%, differed between the soils and so did Cd and Pb uptake in the snails. For lead, EC50s were 2397–6357 mg Pb/kg dry soil, while they ranged between 327 and 910 mg Cd/kg dry soil for cadmium.

Toxicity and metal uptake were highest on the soil with the lowest pH, organic matter content and Cation Exchange Capacity (CEC). Growth reduction was correlated with metal accumulation levels in the snails' soft body, and differences in toxicity between the soils decreased when EC50s were expressed on the basis of internal metal concentrations in the snails. These results confirm the effect of soil properties; pH, CEC, OM content, on the uptake and growth effect of Pb and Cd in H. aspersa, indicating the importance of properly characterizing soils when assessing the environmental risk of metal contaminated sites.

Graphical Abstract



A graphical abstract is a visual representation of a research project. The goal of the abstract is to create a clear story of your scientific method and results that is quickly understood by your audience.

Scientific text

Let’s see the general structure ;

Keywords

6-8 keywords are given immediately after the abstract in the article.

- They should be words or phrases the reader searching for the article in question would use in their search
- They could be single words or phrases
- They should be descriptive
- They should represent key concept

Dose-dependent effects of lead and cadmium and the influence of soil properties on their uptake by *Helix aspersa*: an ecotoxicity test approach

Aboubakre Seddik Sahraoui[1] · Rudo A. Verweij[2] · Hadjer Belhiouani[1] · Oumnya Cheriti[1] · Cornelis A. M. van Gestel[2] · Leila Sahli[1]

Accepted: 7 December 2020

Abstract

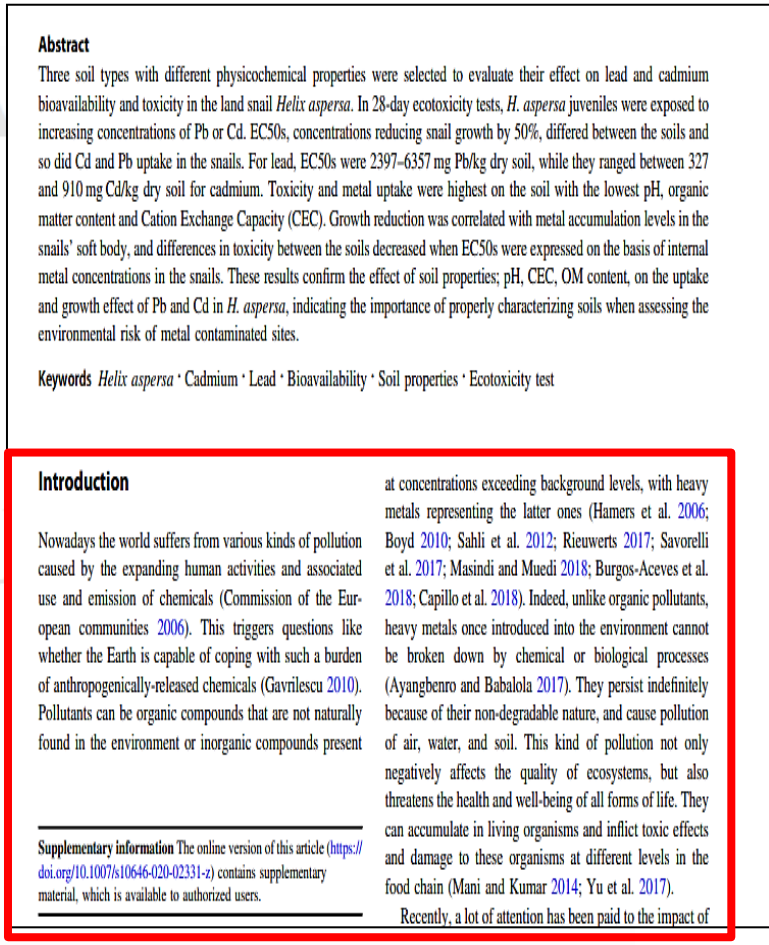
Three soil types with different physicochemical properties were selected to evaluate their effect on lead and cadmium bioavailability and toxicity in the land snail *Helix aspersa*. In 28-day ecotoxicity tests, *H. aspersa* juveniles were exposed to increasing concentrations of Pb or Cd. EC50s, concentrations reducing snail growth by 50%, differed between the soils and so did Cd and Pb uptake in the snails. For lead, EC50s were 2397–6357 mg Pb/kg dry soil, while they ranged between 327 and 910 mg Cd/kg dry soil for cadmium. Toxicity and metal uptake were highest on the soil with the lowest pH, organic matter content and Cation Exchange Capacity (CEC). Growth reduction was correlated with metal accumulation levels in the snails' soft body, and differences in toxicity between the soils decreased when EC50s were expressed on the basis of internal metal concentrations in the snails. These results confirm the effect of soil properties; pH, CEC, OM content, on the uptake and growth effect of Pb and Cd in *H. aspersa*, indicating the importance of properly characterizing soils when assessing the environmental risk of metal contaminated sites.

Keywords *Helix aspersa* · Cadmium · Lead · Bioavailability · Soil properties · Ecotoxicity test

Scientific text

Introduction

- Gives background information or the necessary context for the problem/question/issue to be addressed
- Describes what emerges from this context as the problem/question/issue that needs to be addressed including what the author intends to do with it.
- In other words, through it the author gives a scenario within which he/she identifies what he/she sees as the problem/question/issue and what he/she intends to do with it.



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Introduction

Nowadays the world suffers from various kinds of pollution caused by the expanding human activities and associated use and emission of chemicals (Commission of the European communities 2006). This triggers questions like whether the Earth is capable of coping with such a burden of anthropogenically-released chemicals (Gavrilescu 2010). Pollutants can be organic compounds that are not naturally found in the environment or inorganic compounds present at concentrations exceeding background levels, with heavy metals representing the latter ones (Hamers et al. 2006; Boyd 2010; Sahli et al. 2012; Rieuwerts 2017; Savorelli et al. 2017; Masindi and Muedi 2018; Burgos-Aceves et al. 2018; Capillo et al. 2018). Indeed, unlike organic pollutants, heavy metals once introduced into the environment cannot be broken down by chemical or biological processes (Ayangbenro and Babalola 2017). They persist indefinitely because of their non-degradable nature, and cause pollution of air, water, and soil. This kind of pollution not only negatively affects the quality of ecosystems, but also threatens the health and well-being of all forms of life. They can accumulate in living organisms and inflict toxic effects and damage to these organisms at different levels in the food chain (Mani and Kumar 2014; Yu et al. 2017).

Recently, a lot of attention has been paid to the impact of

Supplementary information The online version of this article (https://doi.org/10.1007/s10646-020-02331-z) contains supplementary material, which is available to authorized users.

Scientific text

Material and Methods

- Explain clearly how the author proceeded methodologically when addressing the problem/question/issue at hand.
- Mention some of the material used in the experiments.
- Contain some initial information about the material or the living organisms used in the research.
- May also include how the author organized or structured the article.

may cause mortality, reproduction and behavioural effects in soil invertebrates (Langdon et al. 2005; Zhang and Van Gestel 2017).

For the risk assessment, total metal concentration usually is not the most relevant measure of exposure as it represents all the chemical forms of the element. More relevant is the fraction or concentration that is available for uptake by organisms or leaching to ground water (Alloway 2013). To what extent the available fraction in the pore water is bioavailable for organisms depends on metal speciation and on competition with other ions for binding and uptake. The properties of soils, especially pH, clay content, organic matter content, cation exchange capacity, and redox conditions, play a major role in determining metal bioavailability in the soil (Ardestani et al. 2014; Kim et al. 2015; Zhang et al. 2019)

The terrestrial mollusc *Helix aspersa* (syn. *Cantareus aspersus* or *Cornu aspersum* O.F. Muller 1774) is a

Material and methods

Ecotoxicity tests

Ecotoxicity tests were performed following the ISO standard 15952 (ISO 2006), which involved 28-day exposures of juvenile *Helix aspera* to a natural soil spiked with increasing concentrations of Cd or Pb. The animals used in this experiment came from a control breeding in big transparent plastic boxes (40 × 28 × 17 cm) under the following conditions: 5 cm layer of soil (soil moisture content was 50–60% of its Water Holding Capacity (WHC)), relative humidity inside the boxes = 80–95%, temperature = 20 ± 2 °C, photoperiod = 18/6 h light/dark. For the tests, homogeneous groups of 10 snails were selected. In order to follow individual growth, each animal was marked with a

Table 1 Physico-chemical properties of the soils used for assessing the bioavailability of Cd and Pb to *Helix aspersa*

Soil	Organic carbon (%)	WHC (%)	pH (0.01 M $CaCl_2$)	CEC (cmolc/kg)	Clay (%)
LUFA 2.2	1.9	45.2	5.5	10.0	8.60
Garden soil	3.4	51.0	5.9	18.8	4.80
Soccer field soil	9.6	38.6	6.9	20.0	5.10

described by Lodi and Koene (2015). Food was provided every three days during the entire test period to satisfy the energy needs of the snails and to eliminate the effect of other stress factors. To provide a source of calcium for the snails, $CaCO_3$ was mixed in with the food at a concentration of 18% (w/w). The humidity inside the test containers was maintained sufficiently high by spraying deionized water on the walls and directly on the soil after the daily removal of faeces and food waste to avoid mould formation.

Scientific text

Results

- Reports the findings of the study .
- Contain graphs, tables , diagrams, maps, pictures …etc
- Provides statistical documentation to demonstrate whether the results are valid and reliable.

Scatter plot

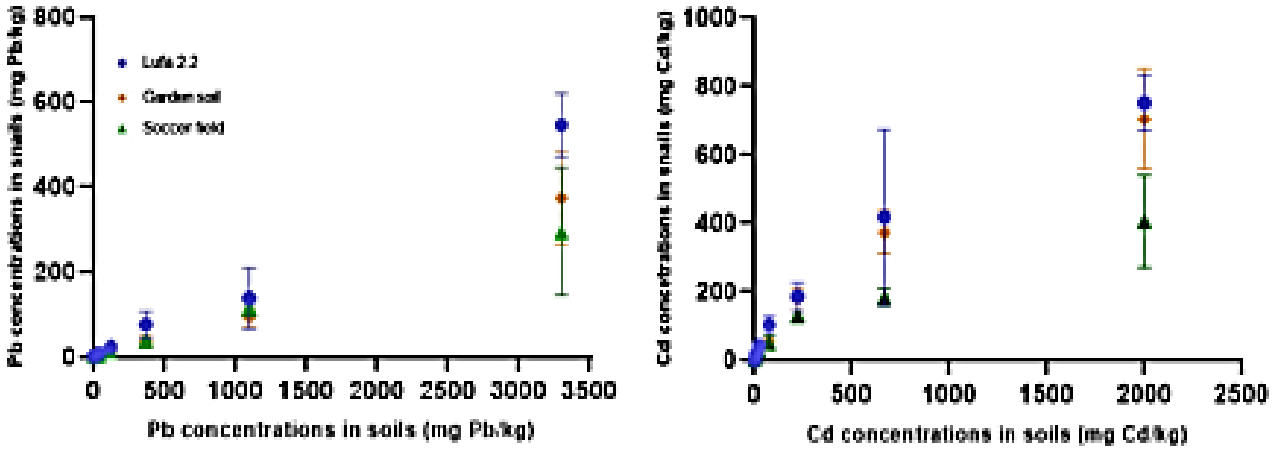


Fig. 2 Average (±SD; $n = 4$) internal Pb (left) and Cd (right) concentrations (mg Pb/kg dry body weight) in *Helix aspersa* exposed for 28 days to different Pb and Cd concentrations in Lufa 2.2, Garden and Soccer field soils

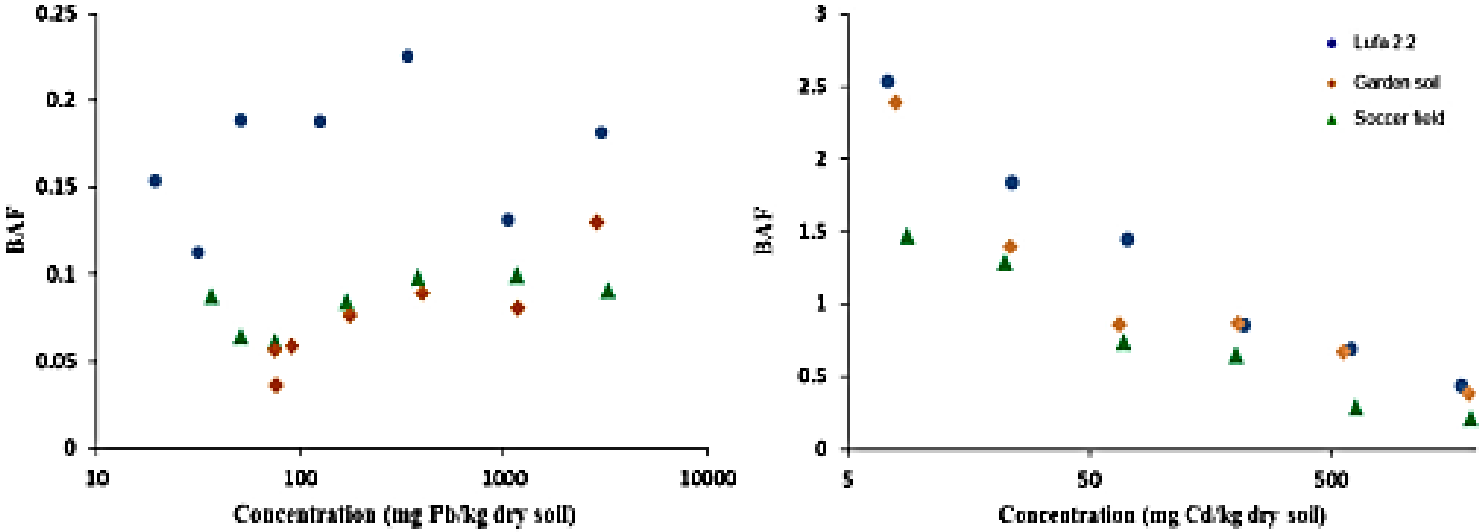


Fig. 3 Bioaccumulation factors (BAF) for the uptake of Pb (left) and Cd (right) in *Helix aspersa* exposed for 28 days to different Pb and Cd concentrations in three different soils

Pictures

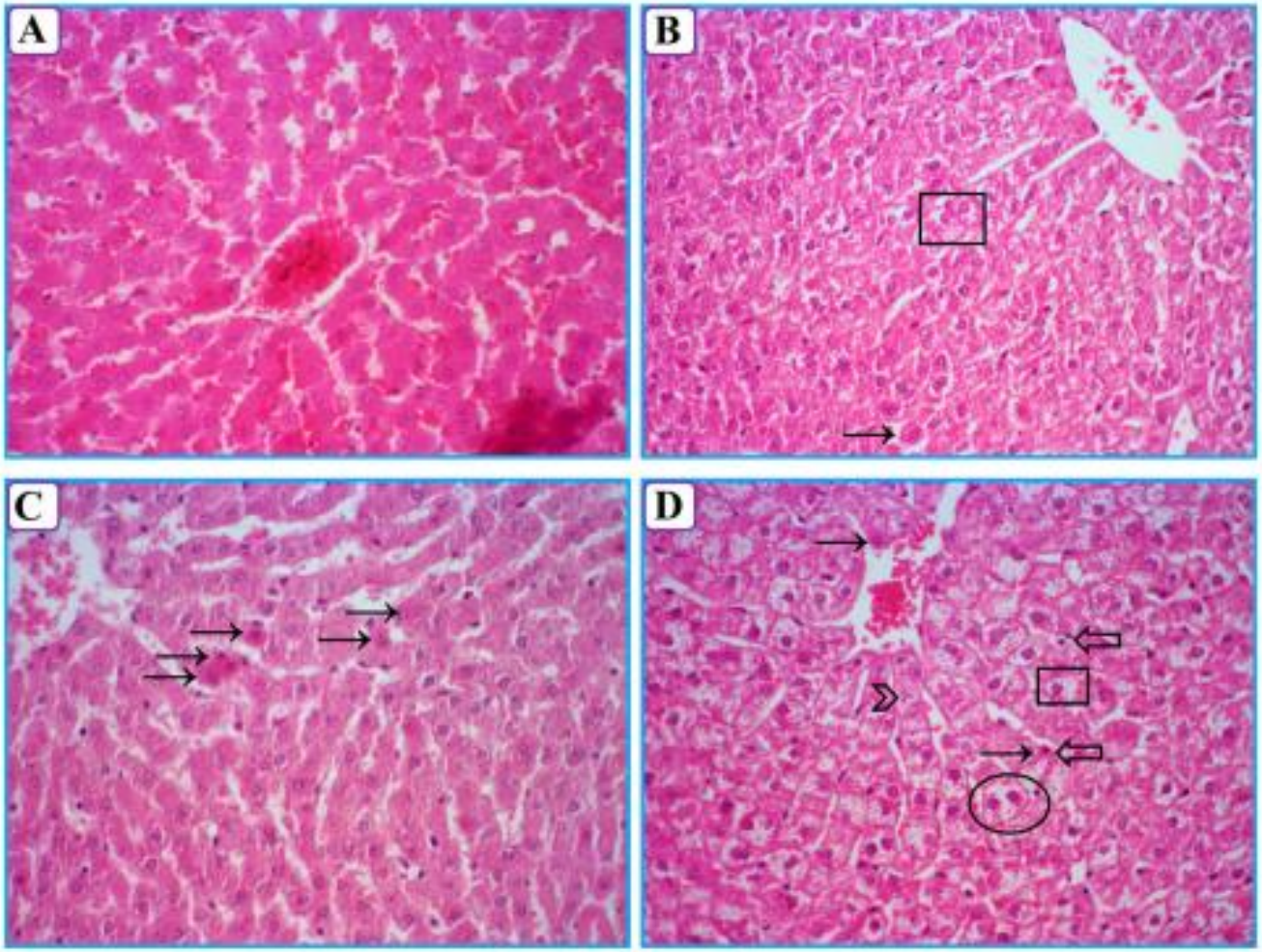
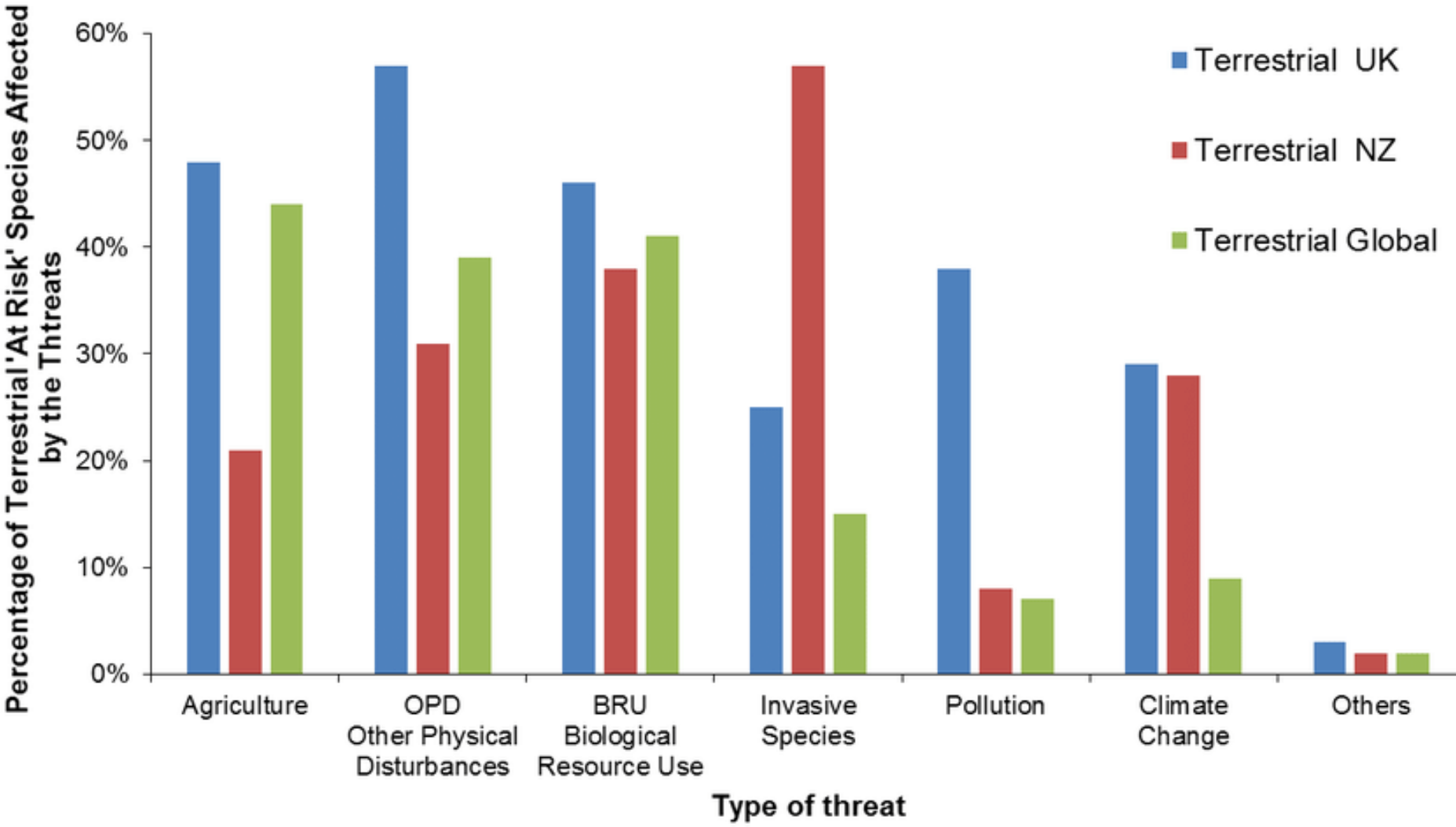
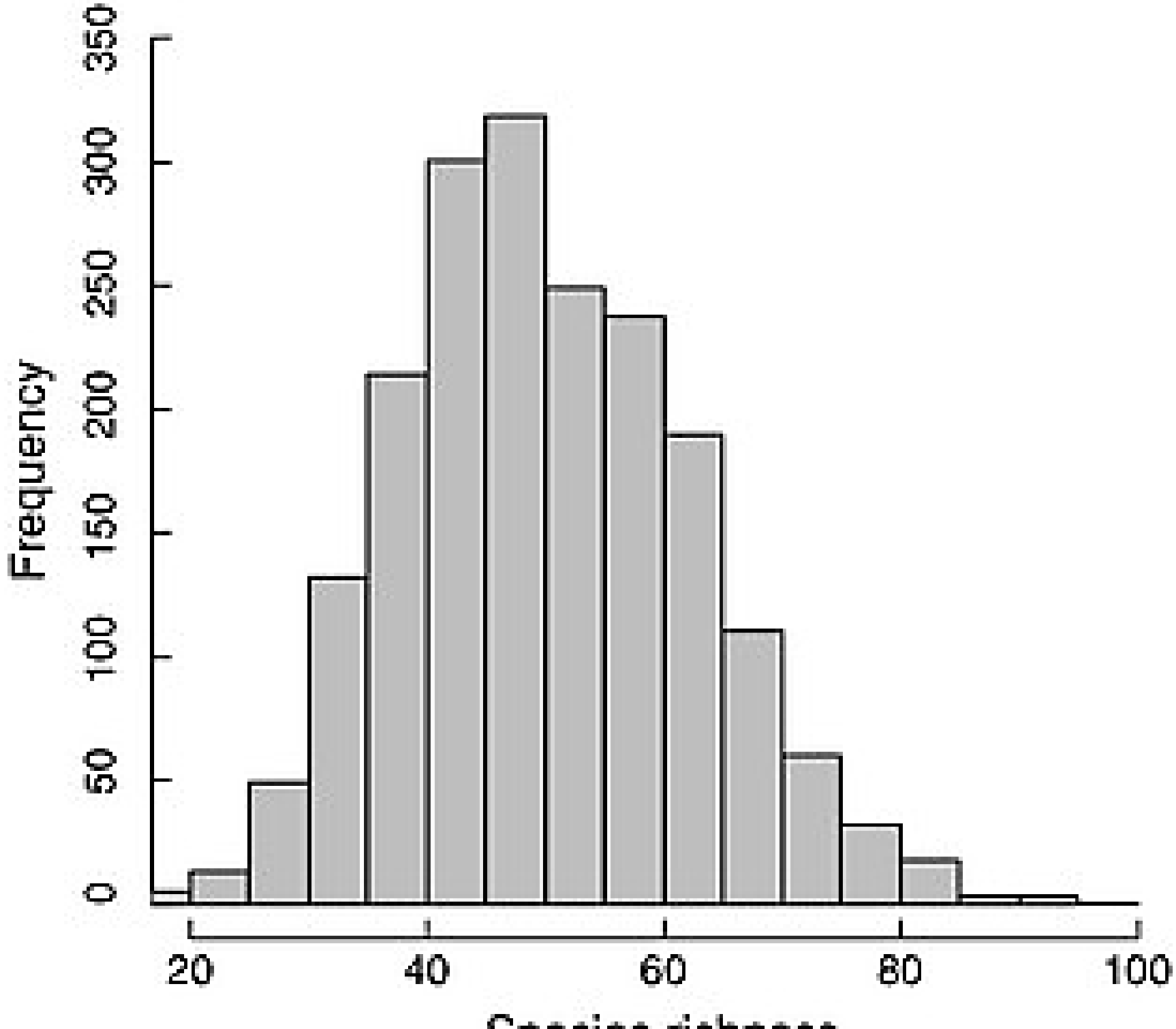


Fig. 5 Representative appearances of liver tissue specimens stained with hematoxylin and eosin (H&E) (40×). The control group (**a**) without any points of liver damage, exposure to 100 dB noise (**b**), exposure to 1000 ppm toluene (**c**), and simultaneous exposure to 100 dB noise and 1000 ppm toluene (**d**) caused swelling, lipidosis (□), and eosinophilic cytoplasm (→). Moreover, pyknosis (⇦), karyorrhexis (≫), and disruption of the cytoplasmic membrane (◯) were observed in some hepatocytes in the simultaneous exposure group (**d**)

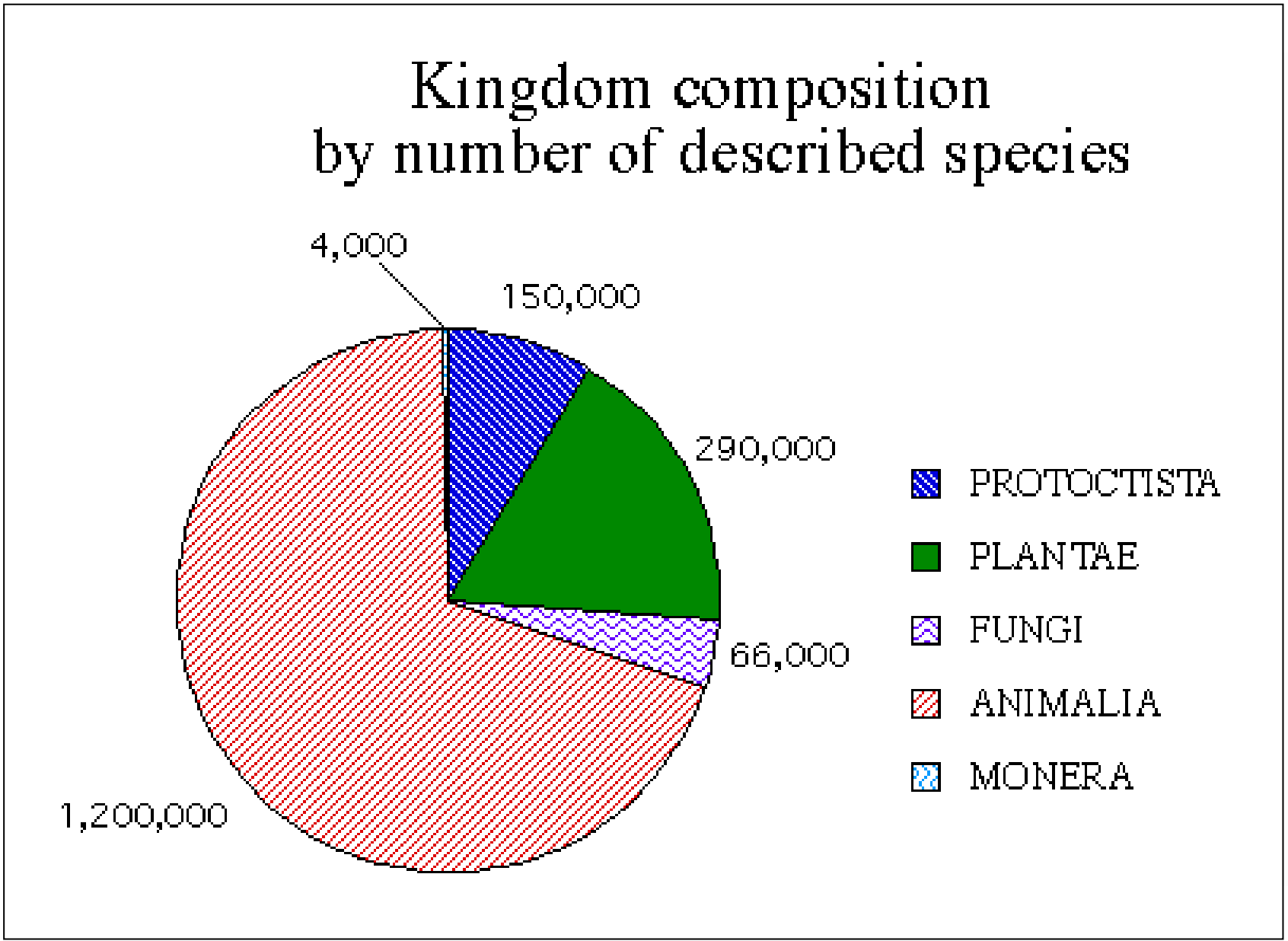
Bar chart


Percentage of Terrestrial 'At Risk' Species Affected by the Thtreats
60%
50%
40%
30%
20%
10%
0%
Terrestrial UK
Terrestrial NZ
Terrestrial Global
Agriculture
OPD Other Physical Disturbances
BRU Biological Resource Use
Invasive Species
Pollution
Climate Change
Others
Type of threat

Histogram chart



Pie chart


Kingdom composition
by number of described species
4,000
150,000
290,000
66,000
1,200,000
PROTOCTISTA
PLANTAE
FUNGI
ANIMALIA
MONERA

Map chart

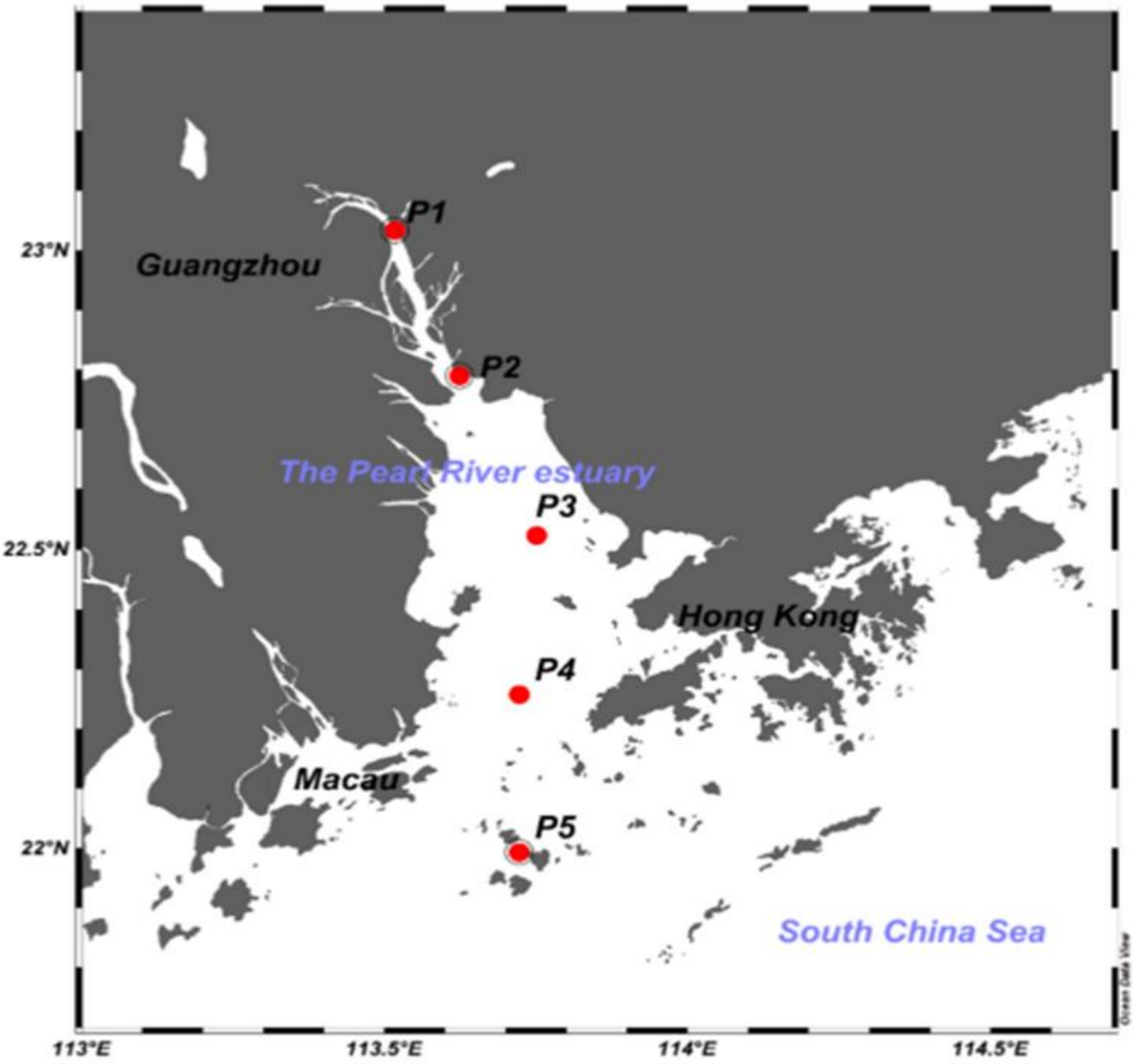
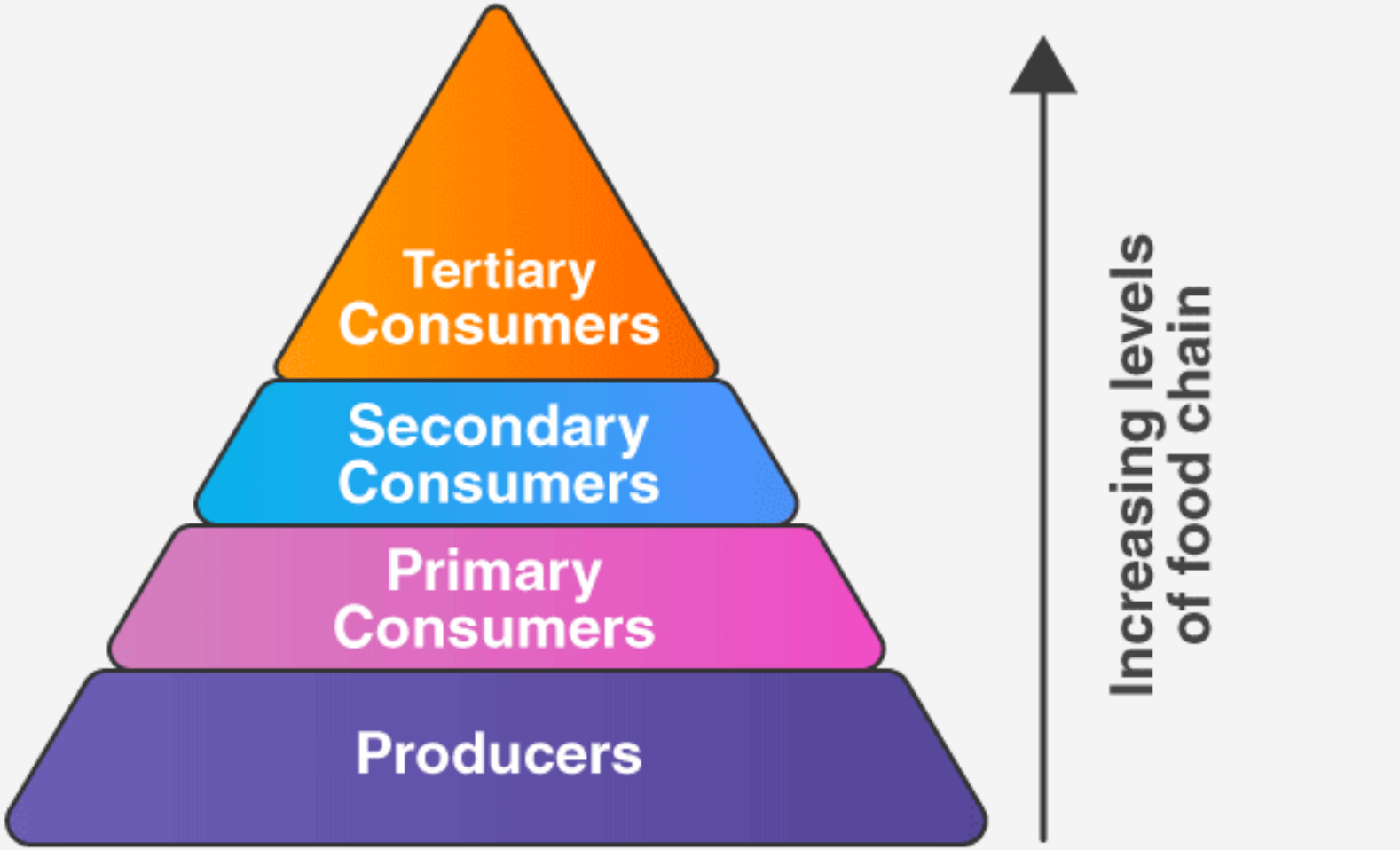
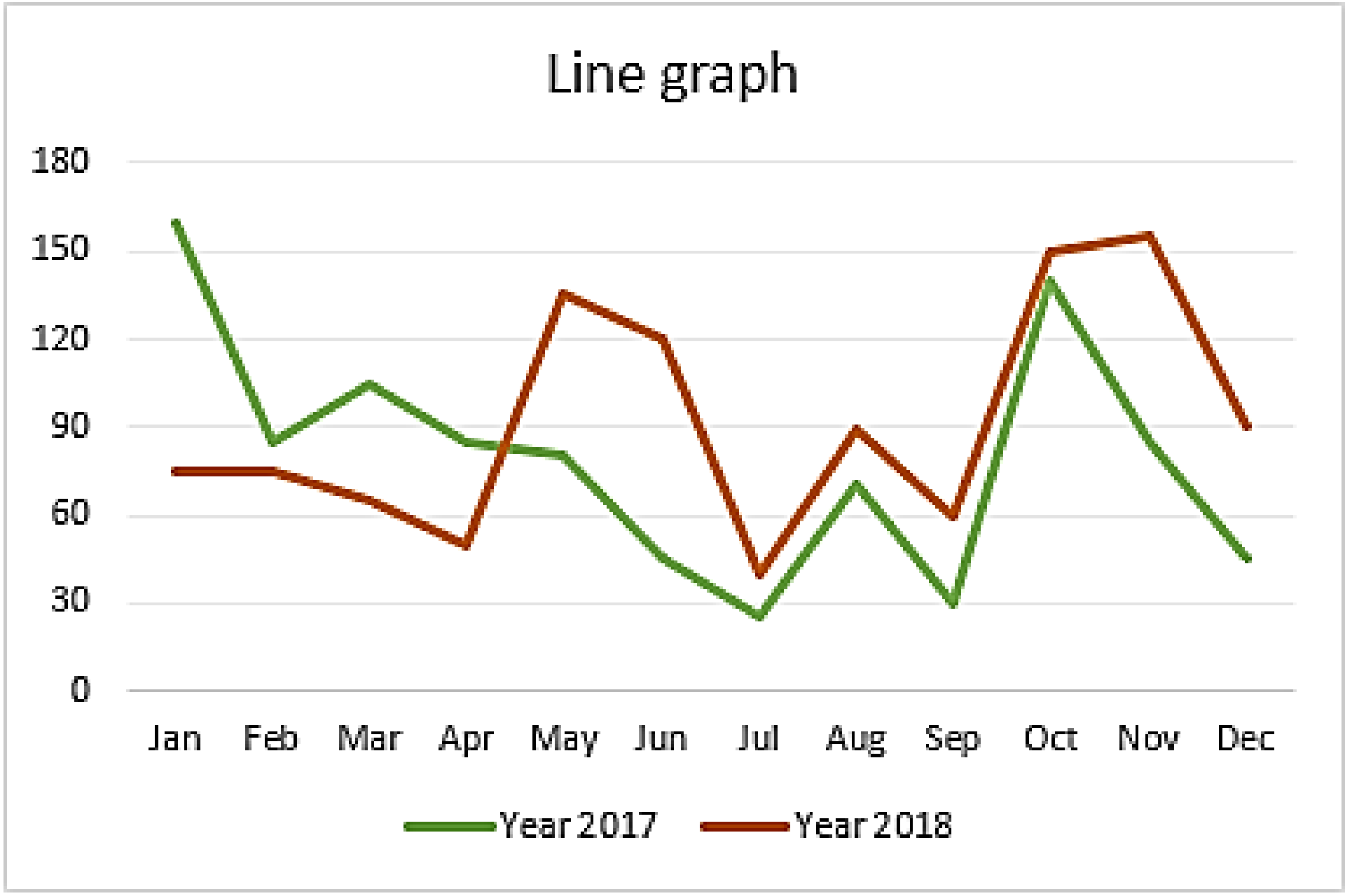


Fig. 1 Location of sampling sites of the PRE in this study

ECOLOGICAL PYRAMID




Line graph
180
150
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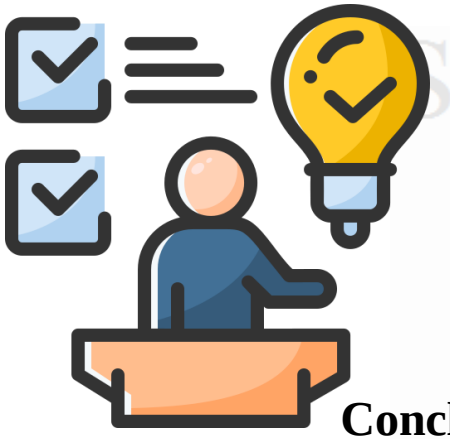
Sep
Oct
Nov
Dec
Year 2017
Year 2018

Scientific text

Discussion

- Describes what the findings mean.
- Relates the findings back to the problem/question stated in the introduction and to the findings of other scholars as reflected in the literature review.
- Explains how results contribute to the existing body of scientific knowledge.

Scientific text



Conclusion

After the discussion section, comes the conclusion of the article.

- Summarizes the results and discussion
- Describes limitations of the study and suggests areas for further research/action.