

North-Western Journal of  
**ZOOLOGY**

---

**Vol. 19, No. 2**  
**(December 2023)**



University of Oradea  
Publishing House  
2023

**NORTH-WESTERN JOURNAL OF ZOOLOGY**  
**(North-West J Zool)**

P-ISSN: 1584-9074 / E-ISSN (CD-Rom): 1842-6441 / E-ISSN (Online): 1843-5629

[Cover image: *Zombrus bicolor* (see pp. 193-196)]

**Former Editor:**

**István Sas-Kovács**

(Oradea, Romania)

**Editor:**

**Severus-Daniel Covaciu-Marcov**

(Oradea, Romania)

**Co-Editors (alphabetical order):**

**Adalbert Balog**

Tg. Mures, Romania

**Karina Battes**

Cluj-Napoca, Romania

**Mirela Câmpean**

Cluj-Napoca, Romania

**Alin David**

Cluj-Napoca, Romania

**Sara Ferentî,**

Oradea, Romania

**Iulian Gherghel**

Iaşi, Romania

**Lujza Keresztes**

Cluj-Napoca, Romania

**Yurii Kornilev**

Sofia, Bulgaria

**Sándor Keszthelyi**

Gödöllő, Hungary

**Hosseinali Lotfalizadeh**

Tehran, Iran

**Simeon P. Lukanov**

Sofia, Bulgaria

**Mohsen Mehrparvar**

Kerman, Iran

**Barna Páll-Gergely**

Budapest, Hungary

**Éva H. Sas-Kovács,**

Oradea, Romania

**Eliana Sevianu**

Cluj-Napoca, Romania

**Cristian Sitar**

Cluj-Napoca, Romania

**Geanina-Magdalena Sitar**

Cluj-Napoca, Romania

**Alexandru Strugariu**

Iaşi, Romania

**Spelling editors (alphabetical order):**

**Nursel Aşan Baydemir**

Kirikkale, Turkey

**Louis S. Hesler**

Brookings, South Dakota, U.S.A

**Murali Krishna**

Nirjuli, India

**Tigran L. Mandalian**

Constanta, Romania

**Edhi Martono**

Yogyakarta, Indonesia

**Kinga Öllerer**

Bucharest, Romania

**Samira Sinaie**

Mashhad, Iran

**Buse Şimşek**

Denizli, Turkey

**Editorial Board:**

**Aaron M. Bauer**

Pennsylvania, USA

**Ioan Coroiu**

Cluj-Napoca, Romania

**Vlad Codrea**

Cluj-Napoca, Romania

**Yuksel Coskun**

Diyarbakir, Turkey

**Kerim Çiçek**

Izmir, Turkey

**Diana Cupşa**

Oradea, Romania

**Ioan Ghira**

Cluj-Napoca, Romania

**Grzegorz Grzywaczewski**

Lublin, Poland

**Anna Farkas**

Budapest, Hungary

**Vassilis Goutner**

Thessaloniki, Greece

**Tibor Hartel**

Sighişoara, Romania

**Ignacy Kitowski**

Chelm, Poland

**Antonis K. Kokkinakis**

Thessaloniki, Greek

**Zoltán Korsós**

Budapest, Hungary

**Boris Krystufek**

Ljubljana, Slovenia

**Péter Lów**

Budapest, Hungary

**Andrei Mihalca**

Cluj-Napoca, Romania

**Irinel E. Popescu**

Iaşi, Romania

**Yusuf Özbel**

Izmir, Turkey

**László Rákosy**

Cluj-Napoca, Romania

**Dennis Rödder**

Bonn, Germany

**Ertan Taşkavak**

Izmir, Turkey

**Mustafa Yaman**

Trabzon, Turkey

**Stefan Zamfirescu**

Iaşi, Romania

**Mehmet Z. Yıldız**

Adiyaman, Turkey

**Journal coverage:**

- Science Citation Index Expanded [Web of Science] - (from 2007)
- Essential Science Indicators (Web of Science)
- Zoological Record (Web of Science) (from 2005)
- Scopus - (from 2008)
- Index Copernicus
- Ulrich's Periodicals Directory

**Available online:**

The journal *North-West J Zool* with full-text articles is available online at <http://biozoojournals.ro/nwjz/index.html>

**Founders:** Severus-Daniel COVACIU-MARCOV & István SAS-KOVÁCS

Publishing House: University of Oradea Publishing House, Universităţii no.1, Oradea 410087, Romania