

IOC-FAO-IPHAB XVII, 18-20 March 2025

The Advanced Phytoplankton Course APC Identification, Taxonomy, Systematics

Adriana Zingone
Stazione Zoologica Anton Dohrn
Naples



Advanced Phytoplankton Course
Taxonomy and Systematics

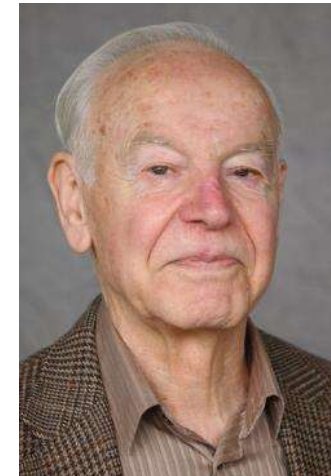


SCOR Working Group 33 on **phytoplankton** established at the SCOR meeting in Mexico in 1969:



Trygve Braarud, (1903-1985)
species-based ecology

M. Bernhard (Italy)
R. W. Eppley (USA)
G. R. Hasle (Norway)
R. Marumo (Japan)
G. A. Robinson (UK)
H. J. Semina (USSR)
T. J. Smayda (USA)



Chairman Karl Banse (1929-2025)
oceanography, plankton

international phytoplankton
course for experienced
participants

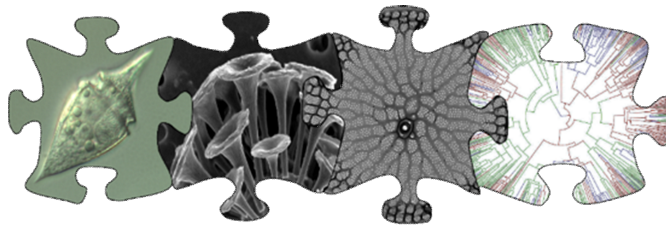


Grethe R. Hasle (1920-2013)
diatom taxonomist

THE AIM OF APC

increase and update the expertise of participants in the taxonomy and identification of diatoms, dinoflagellates, coccolithophores and other phytoflagellates

- emphasis on **light microscopy**



APC 1 - 1976 - OSLO



APC 2 - 1980 OSLO/DRØBAK

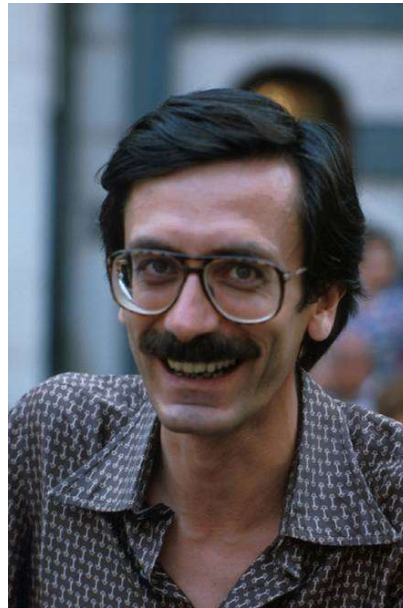


APC 3 - 1983 OSLO/DRØBAK



*Carmelo
R. Tomas*

*APC 4 - 1985
STAZIONE
ZOOLOGICA
NAPOLI*



*Donato Marino
(1947-2002)*

*Carmelo (the late
Donato Marino
(participant in APC 2)
made a tremendous
effort to provide for a
prosperous course*

NAPOLI/ISCHIA/VICO EQUENSE 1985-2008



Advanced Phytoplankton Course 10 - University of Copenhagen, Denmark

12 Nov - 1 Dec 2012



Diana



Federica



Gert



Henrik



Ian



Jacob



Marianne



Marina



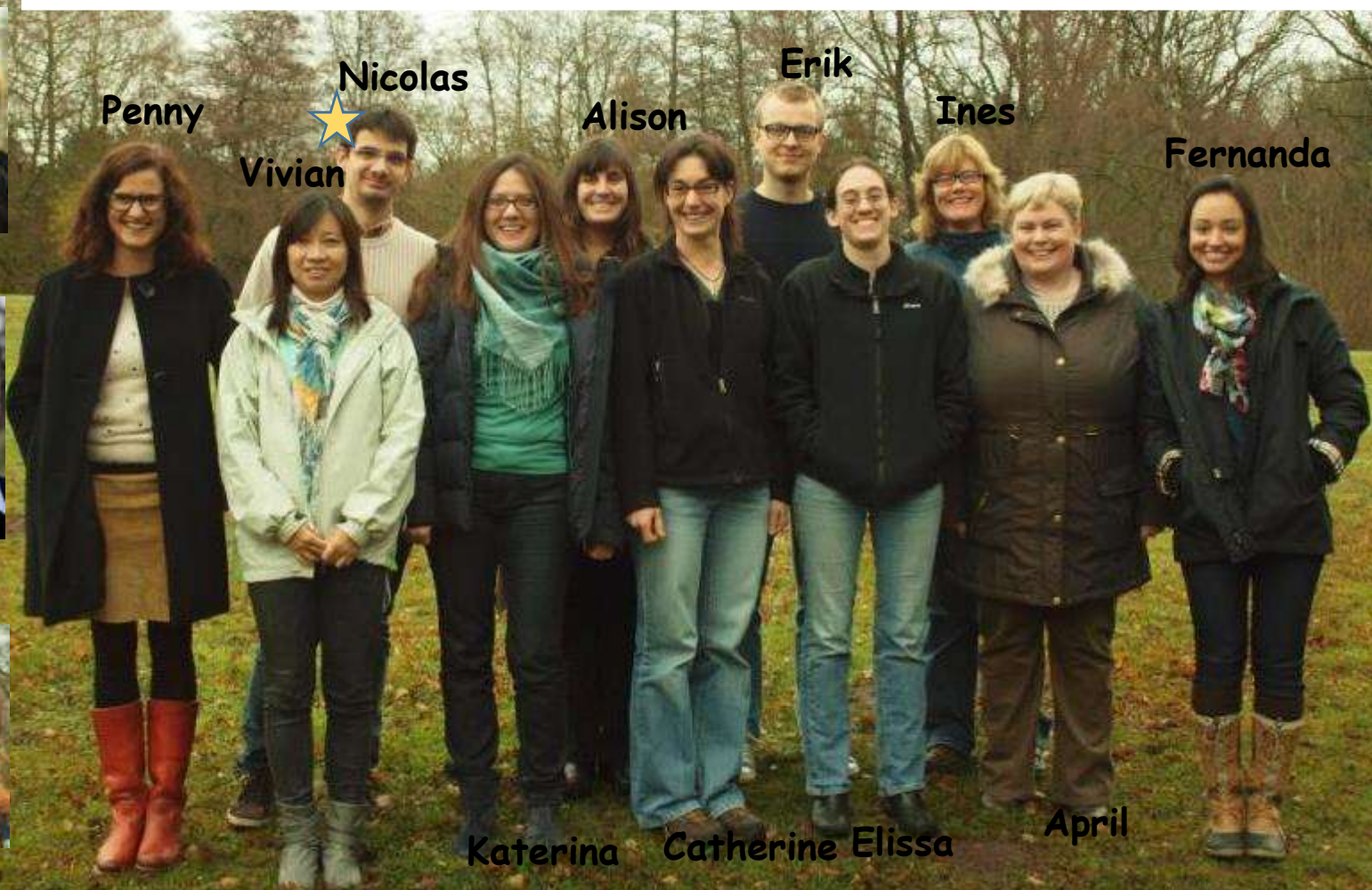
Mona



Niels



Carina



Penny

Vivian

Nicolas

Alison

Erik

Ines

Fernanda

Katerina

Catherine Elissa

April



Nina



Per



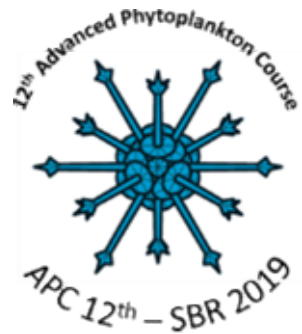
Øjvind



Adriana

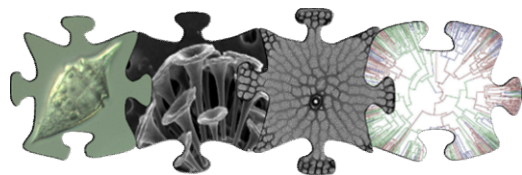
APC 11 – 2015 – NAPOLI





APC 12 – 2019 – Roscoff



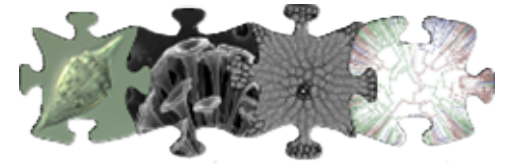


13th Advanced Phytoplankton Course

Identification, Taxonomy, Systematics

6-26 October 2024





ORGANIZING COMMITTEE



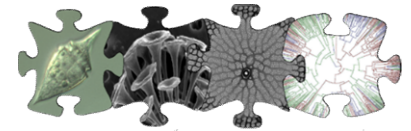
Diana Sarno, Wiebe Kooistra, Marina Montresor, Adriana Zingone



Jacob Larsen, Henrik Enevoldsen



Ian Probert, Daniel Vaultot



SCIENTIFIC AND TECHNICAL ASSISTANCE



WEB support

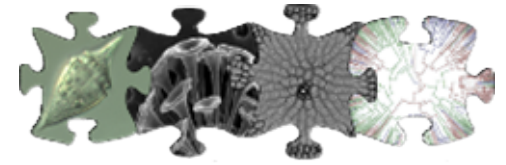


Assistance and hospitality



Microscopes

SUPPORT



Institution hospitality
& facilities



teacher travels



CNRS • SORBONNE UNIVERSITÉ
Station Biologique
de Roscoff



microalgal cultures &
samples

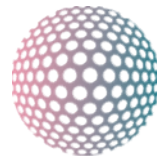


UNIVERSITETET
I OSLO

Natural History
Museum

NORCCA
The Norwegian Culture
Collection of Algae

additional funds



**NATIONAL
BIODIVERSITY
FUTURE CENTER**

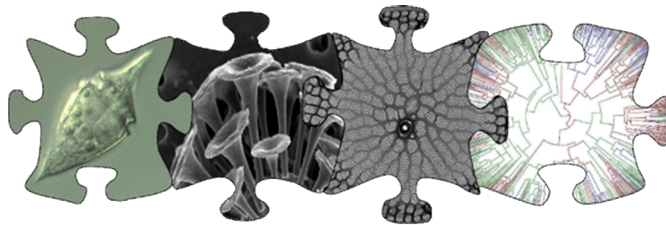


and *in kind* support from the teachers' Institutions

THE AIM OF APC

increase and update the expertise of participants in the taxonomy and identification of diatoms, dinoflagellates, coccolithophores and other phytoflagellates

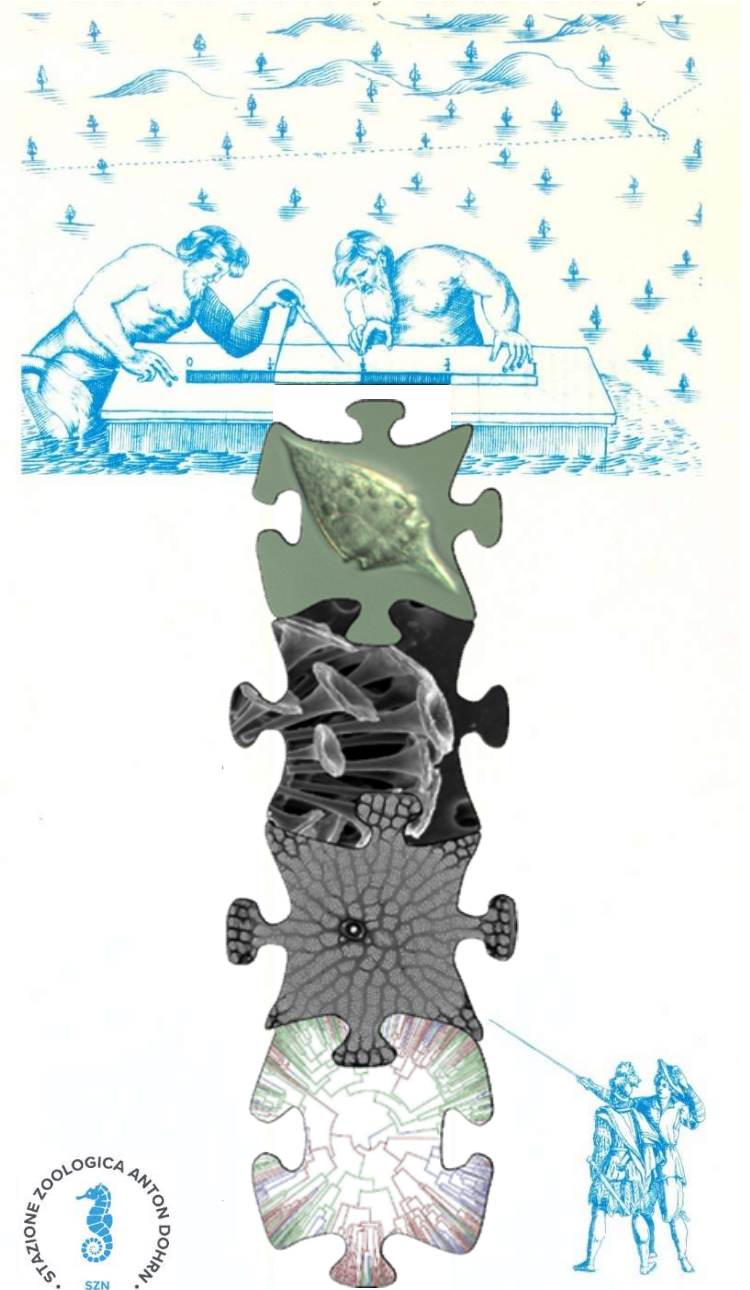
- emphasis on **light microscopy** integrated by **electron microscopy** and **molecular information**



APC 13 Topics

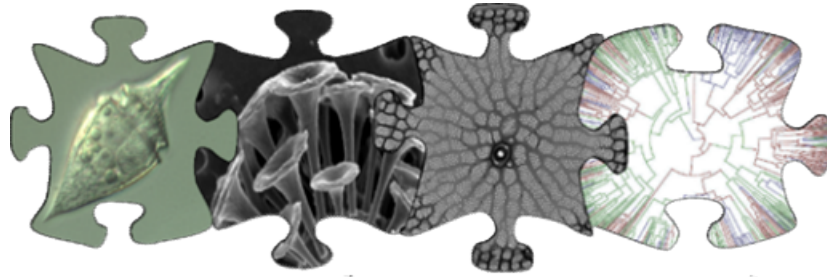
- species morphology and classification
- criteria for species identification
- updated taxonomic literature
- toxic and harmful species
- advanced approaches (e.g., automated imaging systems, metabarcoding)
- websites of interest

forum for discussion



Advanced Phytoplankton Course
Taxonomy and Systematics

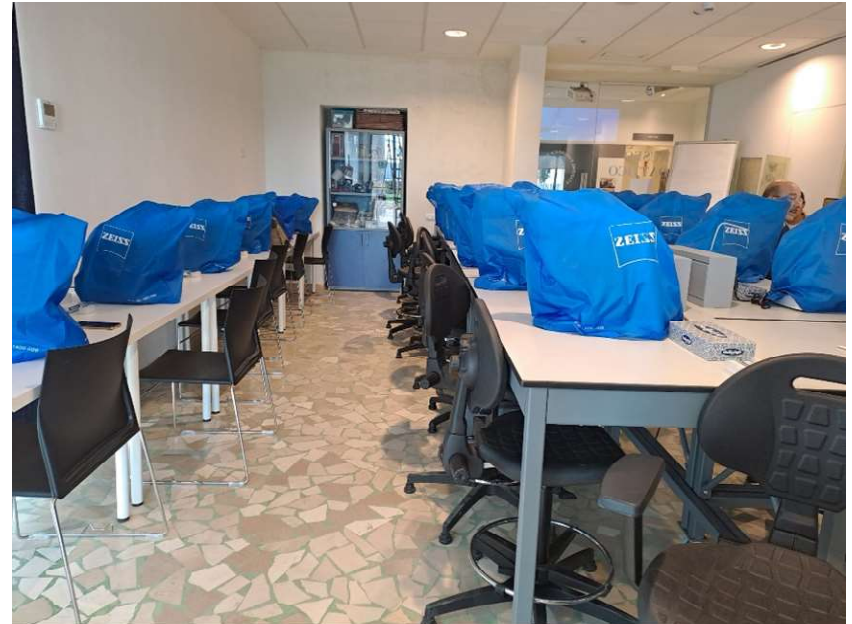
13th Advanced Phytoplankton Course Identification, Taxonomy, Systematics



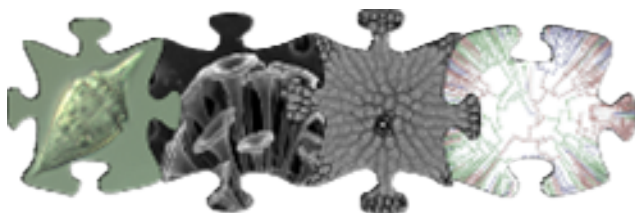
Lectures, demonstrations and practical sessions

Training in classical techniques (light and electron microscopy)

Examination of preserved and live material identified using up-to-date literature and sequence data resources







21 participants from 16 countries (9 EU)

Jasna Arapov, Institute of Oceanography and Fisheries, Split, Croatia
Chandni Bhickta, European Molecular Biology Laboratory, Heidelberg, Germany
Nicklas Bisbo, Aarhus University, Aarhus, Denmark
Melissa Carter, Scripps Institution of Oceanography, University of California, La Jolla, USA
Fuat Dursun, University of Istanbul, Istanbul, Turkey
Ruth Eriksen, Commonwealth Scientific and Industrial Organisation, Hobart, Australia
Sara Harðardóttir, Marine and Freshwater Research Institute, Hafnarfjörður, Iceland
Penelope Harrison, Cawthron Institute, Nelson, New Zealand
Paula Hynes, Irish Marine Institute, Galway, Ireland
Davide Ippoliti, Centro Ricerche Marine, Cesenatico, Italy
Maria Karlberg, Swedish Meteorological and Hydrological Institute, Vastra Frolunda, Sweden
Martina Mascioni, CONICET and Universidad Nacional de La Plata, La Plata, Argentina
Anthony Odell, University of Washington, Seattle, USA
Liz Romero Guardamino, Instituto del Mar del Peru, Callao, Peru
Maria Saggiomo, Stazione Zoologica Anton Dohrn, Naples, Italy
Nagore Sampedro, Institut de Ciències del Mar, Barcelona, Spain
Andrew Shuler, Consolidated Safety Services, inc., Charleston, USA
Tamsyne Smith-Harding, Microalgal Services, Ormond, Australia
Nerea Valcárcel Pérez, Spanish Institute of Oceanography, Málaga, Spain
Jianyan Wang, National Natural History Museum of China, Beijing, China
Kin Yu Yang, Agriculture, Fisheries and Conservation Department, Hong Kong



14 teachers from 7 countries (6 EU)

Nicolas Chomérat
 IFREMER, Concarneau, France
Bente Edvardsen, Wenche Eikrem, Daniel Vulot
 University of Oslo, Norway
Diana Sarno, Emilie Houliez, Wiebe Kooistra,
Marina Montresor, Adriana Zingone
 SZN, Naples, Italy
Carina Lange
 University of Concepción, Chile
Jacob Larsen
 IOC UNESCO SCCHA, Denmark
Nina Lundholm
 University of Copenhagen, Denmark
Ian Probert
 SBR, Roscoff, France
Urban Tillmann
 AWI, Bremerhaven, Germany



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 Station Biologique
 de Roscoff



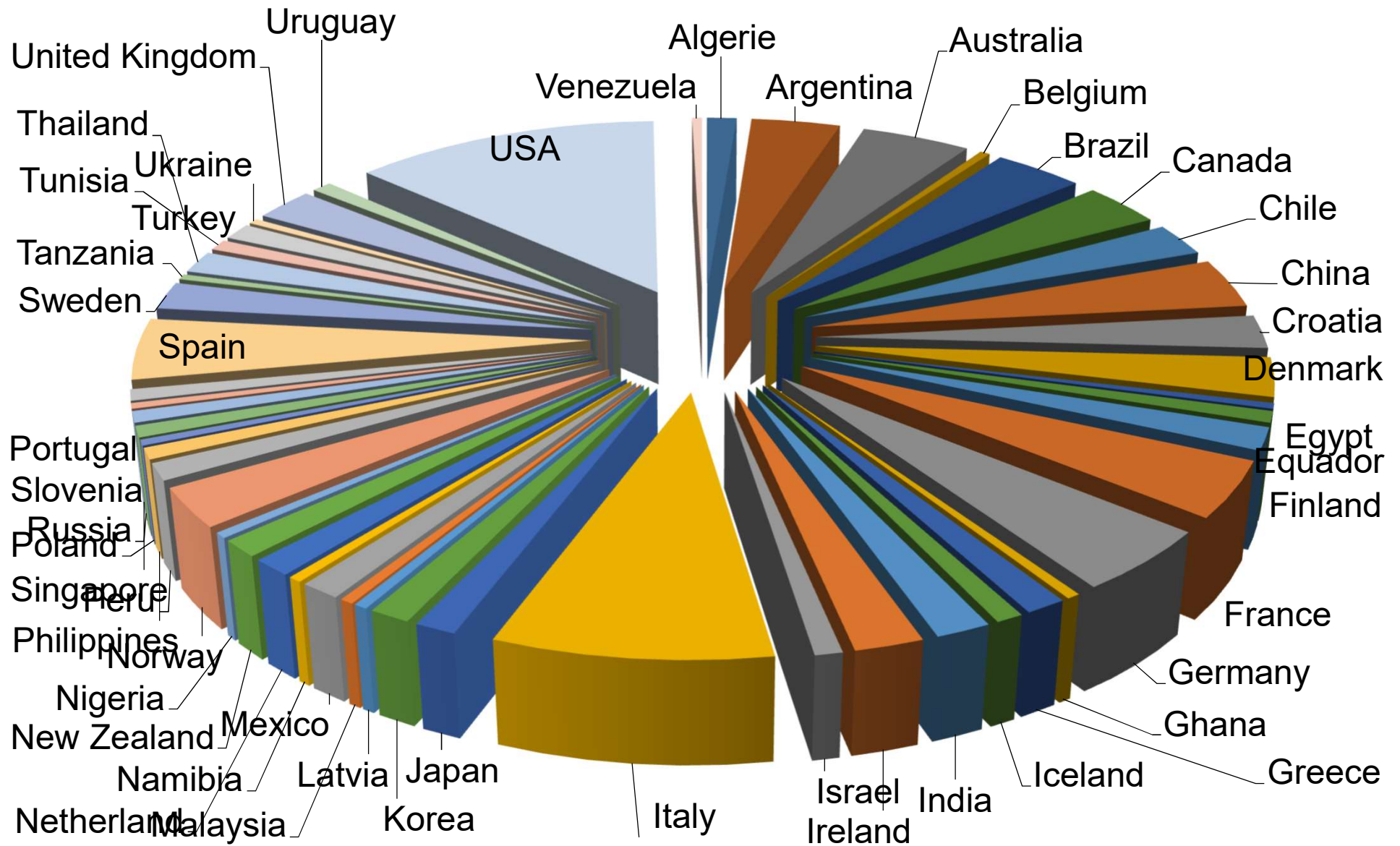
Intergovernmental
 Oceanographic
 Commission

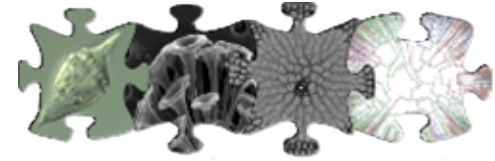


GTG@
 GLOBE TROTTER GROUP

1. The APC13 faculty, with logos of APC13 (by Leonilde Roselli) and Organizing Committee

1976-2024: 240 participants from 50 countries





FINAL TEST AND ATTENDANCE CERTIFICATE

COURSE EVALUATION:

BY THE STUDENTS:

Mainly very positive **but** too much information in three weeks

BY IOC-OTGA:

Overall score 60/63 (95%)

Harmful Algae News

AN IOC NEWSLETTER ON TOXIC ALGAE AND ALGAL BLOOMS

No. 77 – December 2024 · <https://hab.ioc-unesco.org/>



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HARMFUL ALGAE NEWS NO. 77 / 2024

The 13th Advanced Phytoplankton Course: Holding back the taxonomy crisis for three weeks

Taxonomy forms the foundation of all research fields concerning phytoplankton, encompassing ecology, physiology, harmful algal blooms, and biotechnology. Species names act as anchors, linking information on morphology, life cycles, distribution and biochemistry of a given organism, thereby constructing the edifice of human knowledge. Traditionally, the taxonomy of unicellular

organisms has been a central theme at the Station Zoologica Anton Dohrn in 1985, 1990, 1995, 1998, 2005, 2008, 2015 and 2024, while APC10 was held at the University of Copenhagen in 2012 and APC12 at the Station Biologique de Roscoff (SBR, France) in 2019.

The APC series aims to provide already experienced participants with up-to-date knowledge on the identification and taxonomy of marine phy-

cussions where participants can share their experience and knowledge.

The 13th Advanced Phytoplankton Course (APC13) was hosted at the Stazione Zoologica Anton Dohrn in Naples (6–26 October 2024), and was organised together with the Station Biologique de Roscoff and the IOC Science and Communication Centre on Harmful Algae (IOC UNESCO/ SCCHA), with support of the Ocean Teacher Global Academy (IOC UNESCO/ OTGA). The Museum-Darwin Dohrn of the SZN provided the venue, in a room equipped with 23 microscopes graciously provided by ZEISS. The course faculty consisted

APC 14

- Venue: Station Biologique de Roscoff (SBR, Brittany, France)
- Tentative date: Autumn 2026 or Spring 2027
- Organizing CommitteeC: SBR, IOC, SZN and UIO
- Local organizers: Ian Probert, Priscillia Gourvil & RCC team
- Dedicated teaching lab (capacity for 26 students)
- Microscopes equipped with Zeiss Digital Classroom
- Roscoff Culture Collection (RCC) for reference strains
- In-house accommodation

