

50 anni di ricerca limnologica sui laghi Maggiore e Lugano



Gianluca Corno



1882: Formalization of the Commissione Italo-Svizzera per la Pesca (CISPP)



| Periodo | Commissari italiani | Periodo | Commissari svizzeri |
|-----------|---------------------|-----------|---------------------|
| 1887-1897 | Venini | 1887-1889 | Franscini |
| 1897-1906 | Scalini | 1889-1897 | Waseschà |
| 1906-1909 | Besana | 1897-1942 | Botta |
| 1909-1911 | Rizzetti | 1943 | Mathey Doret (a) |
| 1911-1924 | Cermenati (b) | 1943-1949 | Albisetti |
| 1924-1935 | De Marchi (c) | 1949-1972 | Mathey Doret |
| 1935-1973 | Borromeo (d) | 1972-1988 | Pedroli |
| 1973-2003 | Del Ponte | 1988-1998 | Schweizer |
| 2003 | Zacchera (e) | 1998 | Staub (e) |

1969: Commissione CISPP meeting at Isola Bella: Starting of the first program of Limnological Research in the shared waters (and watersheds) between Italy and Switzerland



Commissione in corpore,
da destra : (sin.foto)

dott. PEDROLI
dott. RIMA
prof.ssa TONOLLI
prof. JAAG
ing. MATTHEY-DORET
principe BORROMEO
dott. TRINCI
prof. COMINAZZINI
dott. SAMPIETRO
ing. KOC SIS

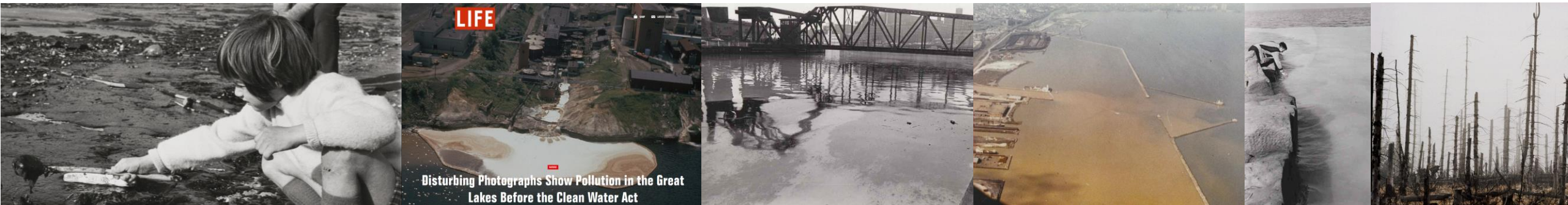
Photo by Roberto Bertoni's archive

1972: Establishment of the **Commissione Internazionale per la Protezione delle Acque Italo-Svizzere (CIPAIS)**

Overall objective: to conduct studies aimed at the protection of Italian and Swiss surface waters from pollution.

Institutions involved: Governments, Regions of Piedmont and Lombardy, Cantons of Ticino, Valais, and Graubünden.

Immediate objective: to analyse the ongoing process of eutrophication, identify the principal nutrient sources, and propose potential remediation measures.



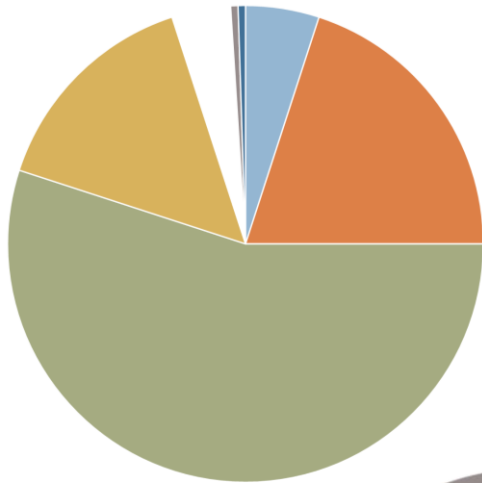
1978: **Five-year research programs** on river basins (climatology, hydrology, and chemical loads from tributaries), on lakes (physical limnology, hydrochemistry, and biotic components, including phytoplankton, zooplankton, bacteria, and macrophytes). **Sezione 2: Ricerche sulle Sostanze Inquinanti** is established.

2008: **Sezione 3** was established, originally defined as **Ecomorfologia delle rive**. It was later re-organised and its objectives broadened; today it is defined as **Studi su ambienti litorali e tematiche emergenti**. The section is today focusing on the potential problems caused by the accumulation of plastics and the introduction of allochthonous species.

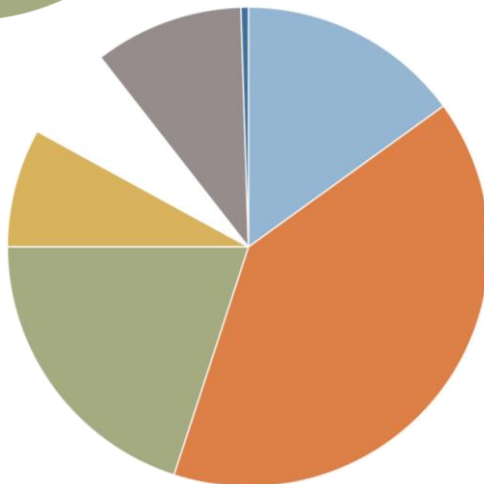
2010: The annual **Control Panel** is published online, summarising selected key parameters that enable citizens to rapidly evaluate the condition of water bodies.

2012: The research programs are shortened from five-year to **three-year cycles** to better address emerging issues and to deliver faster responses in a rapidly evolving environmental context.

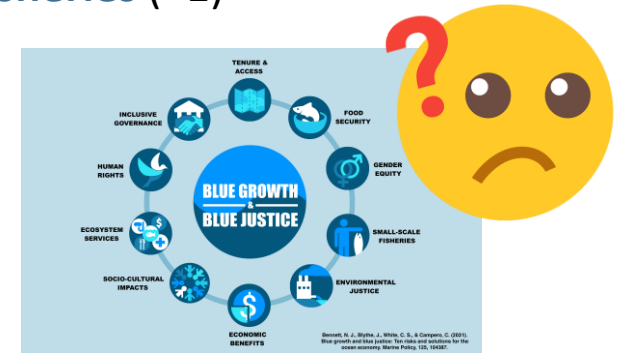
Lake Maggiore (watershed): The most important strategic freshwater reserve in Italy (23% of the national GDP is generated in areas that rely on water from Lake Maggiore).



Resource use: domestic (5%), industry (secondary and primary sectors; 20%), agricultural (55%), energy production (15%), tourism (>1%), fisheries (>1)



Economic relevance: domestic (15%), industry (second. and prim. sectors; 40%), agricultural (20%), produzione di energia (8%), tourism (10%), fisheries (nq)

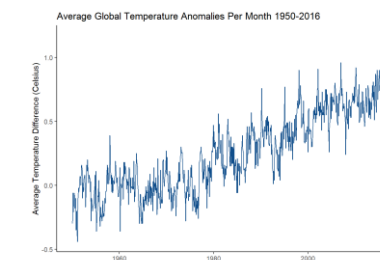
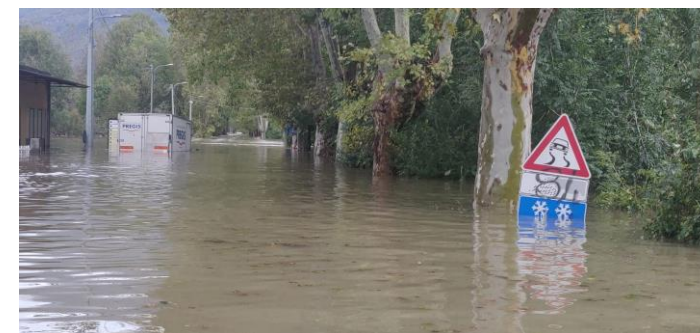


Lake Maggiore: limnological surveys

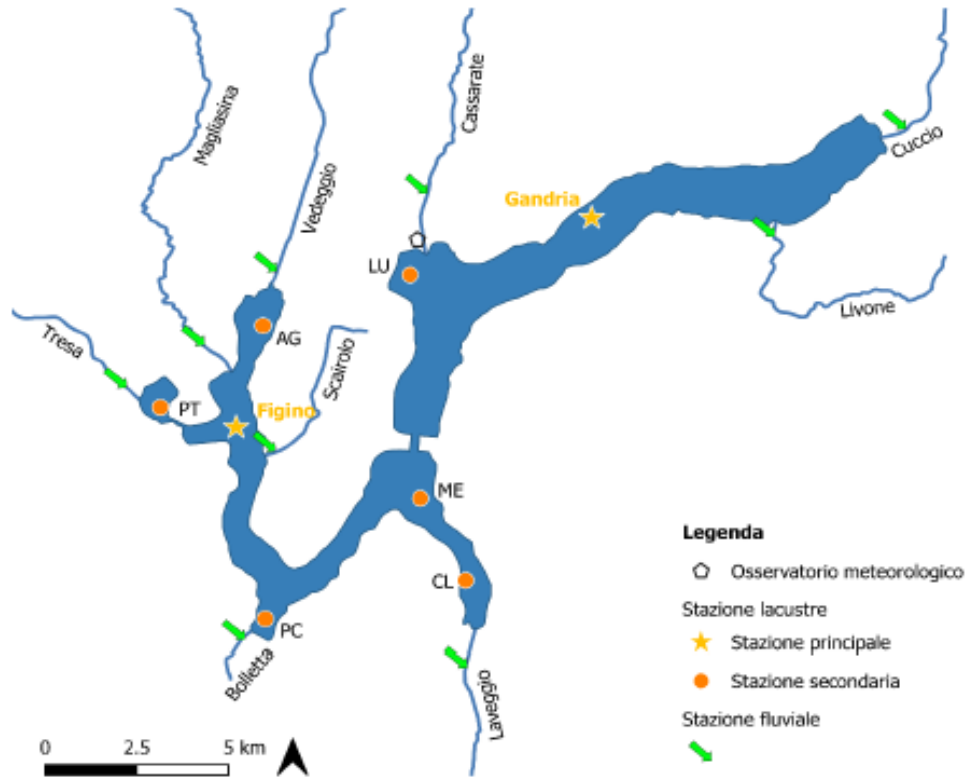
- INDAGINI SULL'EVOLUZIONE CLIMATICA NELL'AREALE DEL LAGO MAGGIORE ATTRAVERSO IL MIGLIORAMENTO DELLA RETE METEO-IDROLOGICA E APPROFONDIMENTI SUI FENOMENI ESTREMI
- VALUTAZIONE DEGLI EFFETTI DI EVENTI METEOROLOGICI ESTREMI SUL REGIME DI MESCOLAMENTO DEL LAGO MAGGIORE ATTRAVERSO L'UTILIZZO DI UN MODELLO ACCOPPIATO ECOLOGICO-IDRODINAMICO MONODIMENSIONALE E DI UN MODELLO IDRODINAMICO TRIDIMENSIONALE
- EVOLUZIONE STAGIONALE E A LUNGO TERMINE DELLE CARATTERISTICHE CHIMICHE DEL LAGO MAGGIORE
- EVOLUZIONE DELLE ASSOCIAZIONI FITOPLANCTONICHE IN RELAZIONE A FATTORI DI CONTROLLO TROFICI E CLIMATICI
- INDAGINI SULL'EVOLUZIONE DEL POPOLAMENTO ZOOPLANCTONICO DEL LAGO MAGGIORE
- IL CARBONIO ORGANICO E LE SCHIUME
- **SOVRAPPOSIZIONE DELLA NICCHIA TROFICA TRA LE SPECIE ITTICHE** PRINCIPALI DEL LAGO MAGGIORE (end 2024)
- **EFFETTI DEL RISCALDAMENTO GLOBALE SULLA COMUNITÀ MICROBICA** CON RIFERIMENTO AI BATTERI POTENZIALMENTE PATOGENI PER L'UOMO E ANIMALI (started 2025)
- PRESENZA E DISTRIBUZIONE DI BATTERI ANTIBIOTICO-RESISTENTI NELLE ACQUE DEL LAGO MAGGIORE

Lake Maggiore: old and new challenges

- Global warming
- Biodiversity loss
- New species introduction
- Modern use of long-time series
- Science and scientific method under attack

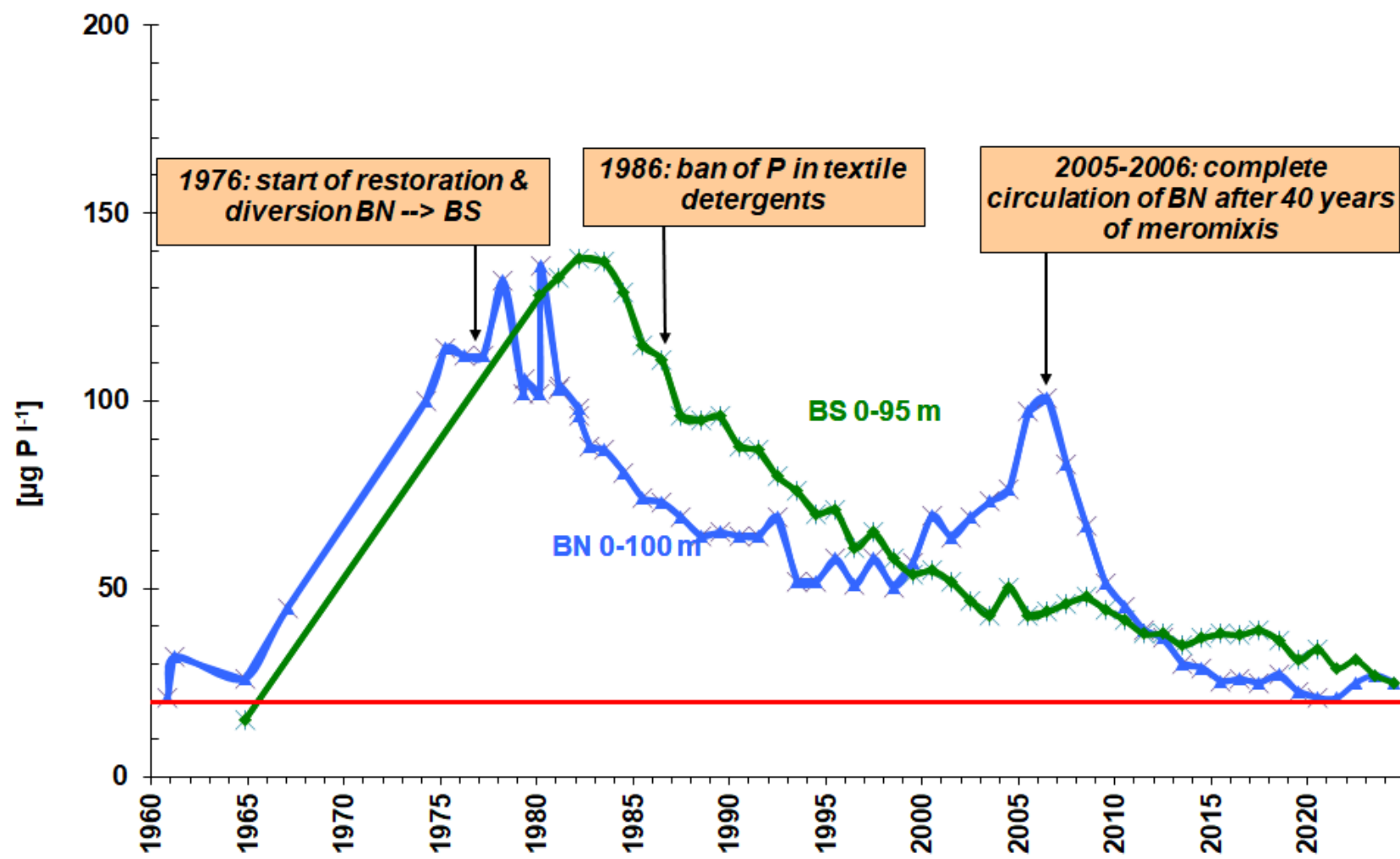


Lake Lugano: limnological survey

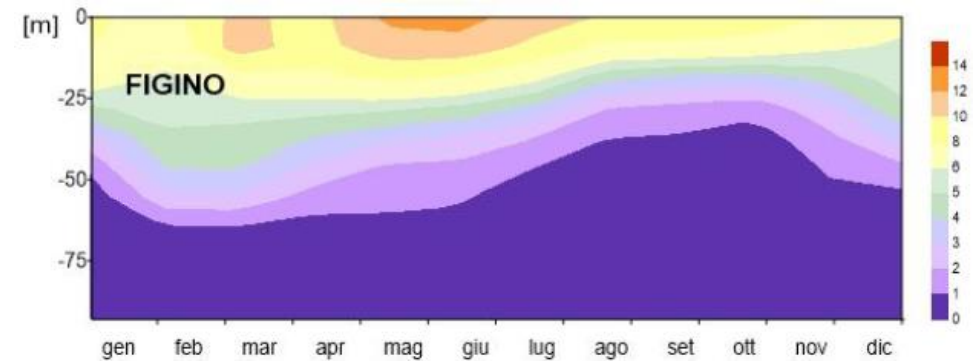
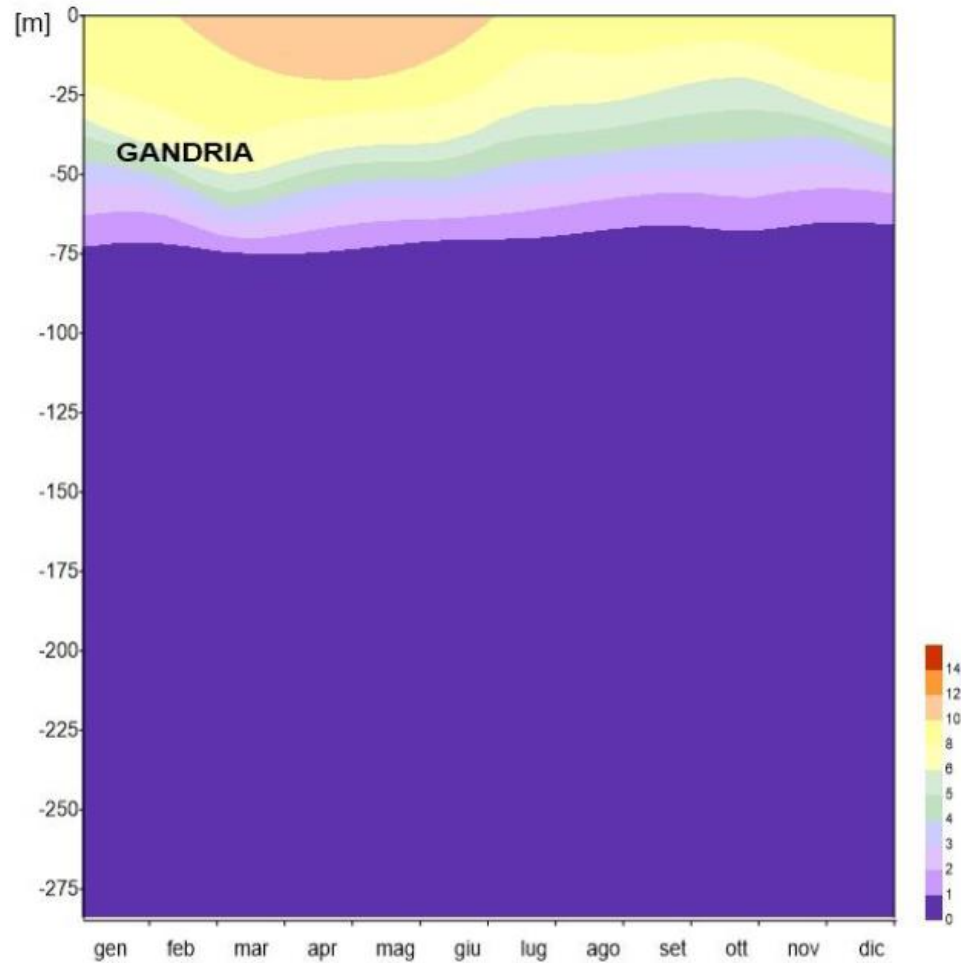


- 2 main sampling stations
- 6 secondary gulfs
- Focus on algal blooms
- In situ sensors
- Remote sensing

Lake Lugano: phosphorus trend



Lake Lugano: oxygen concentration (2024)



[mg O₂ / L]

Lake Lugano: algal blooms



Dolichospermum lemmermannii Riva San Vitale
(June 2023, IST-SUPSI)



Microcystis sp. Riva San Vitale
(August 2023, IST-SUPSI)

Lake Lugano: neobiota



Dreissena rostriformis bugensis



Pectinatella magnifica (IST-SUPSI)