



## Ocean Acoustic During Covid-19

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### Why in News

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There was reduced **noise pollution** on the surface of earth during the **Covid-19 pandemic** owing to lockdowns and stop of economic activities (like international trade).

In the underwater world, too, **anthrophony (human-made sounds)** reduced substantially for long months.

### Key Points

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- **Noise in the Ocean:**

- The three broad components of oceanic acoustics are:
  - **Geophony:** Sounds created by **non-biological natural events** like earthquakes, waves and bubbling.
  - **Biophony:** Sounds created by the ocean's living creatures.
  - **Anthrophony:** Sounds created by human beings (a large portion of which is **shipping noise**).
- According to 'the Soundscape of the Anthropocene Ocean report' published in Science Journal in 2021, **geophony and biophony dominated the soundscape** of oceans before the industrial era.
  - However, now, **anthrophony interferes with and alters** these natural components.

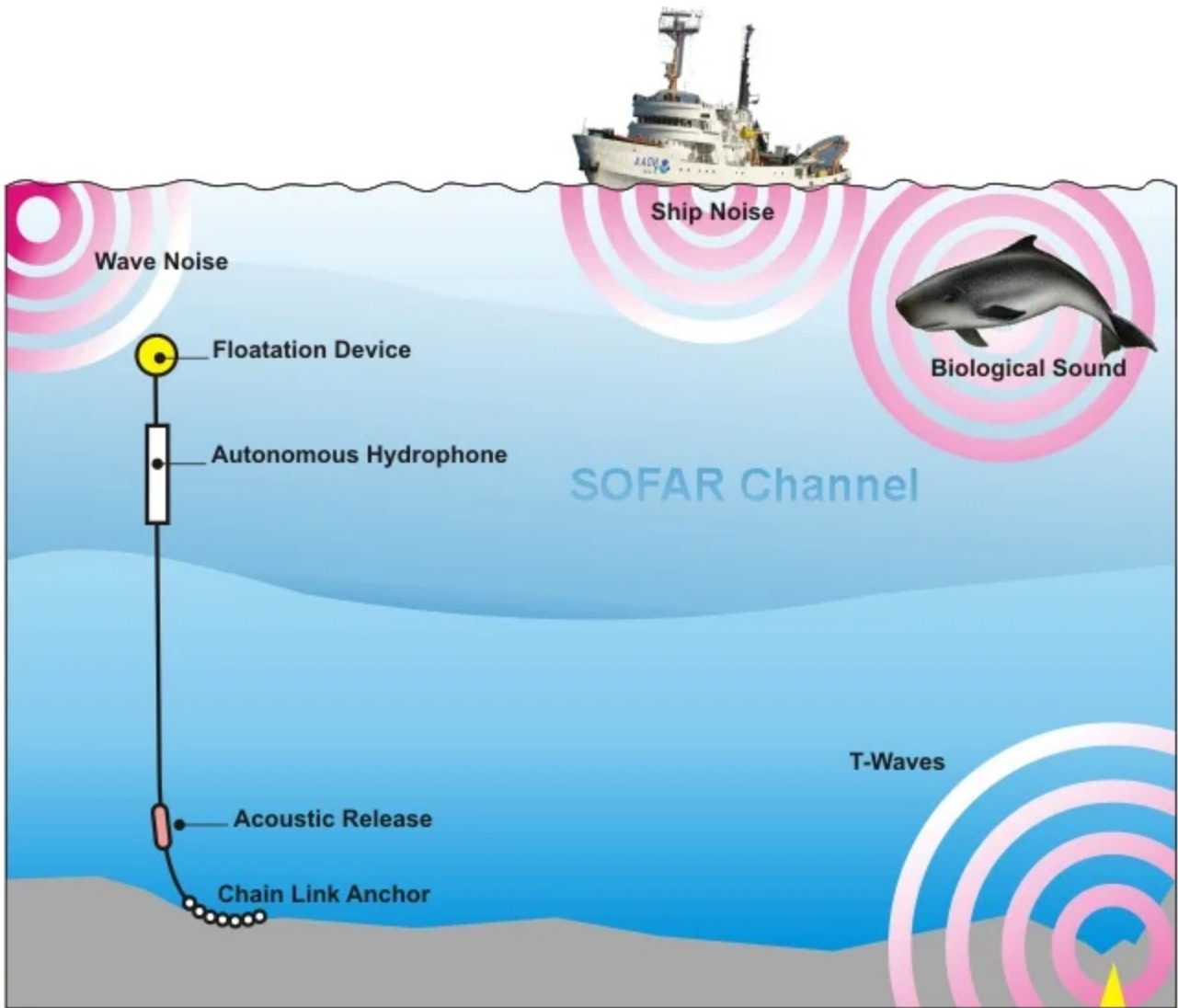
- **Noise Level in Modern Times:**

- The oceans of the **current geological era (Anthropocene era)** - when human-made disruptions largely influence the environment) are noisier than the pre-industrial times.
- During the first few days of the pandemic, ocean sound monitors at several places recorded a decibel (dB) drop.
- The hydrophones at the **Endeavour node of Canada's Neptune Ocean Observatory showed an average decrease of 1.5 dB** in year-over-year mean weekly noise power spectral density at 100 hertz.

- **Impact of Anthrophony:**
  - In the short term anthrophony masks the **auditory signal processing by marine animals, weakening their ability** to forage for food, **escape a predator or attract a mate.**
  - In the long run, it can thin out the population of some underwater species.
- **The International Quiet Ocean Experiment (IQOE):**
  - It is an international scientific program to promote research, observations, and modelling to improve **understanding of ocean soundscapes and effects of sound on marine organisms.**
  - It started in 2015 and will go on till the end of 2025. The IQOE team has gathered large quantities of data during the Covid-19 pandemic.
  - IQOE is developing methods to make **ocean acoustic data more comparable. These data will be compiled into a global dataset to establish trends in ocean sound** and look for effects of the Covid-19 pandemic on ocean sound.
  - The IQOE has identified **a network of over 200 non-military hydrophones (underwater microphones)** in oceans across the world.
    - Most of the hydrophones in the network of this project are along the **shores of the USA and Canada.** Now the presence is increasing in several other parts of the world, especially Europe.
  - These hydrophones **(that pick up even faraway low-frequency signals)** have recorded sounds from whales and other marine animals, as well as those emanated by human activities.

## Hydrophone

- Just as a **microphone collects sound in the air, a hydrophone detects acoustic signals under the water.**
- Most hydrophones are based on a special property of certain ceramics that produces a small electrical current when subjected to changes in underwater pressure.
- When submerged in the ocean, a ceramic hydrophone produces small-voltage signals over a wide range of frequencies as it is exposed to underwater sounds emanating from any direction.
- By amplifying and recording these electrical signals, hydrophones measure ocean sounds with great precision.



**Source: DTE**