METHOD AND SYSTEM FOR THE NON-INVASIVE RECORDING OF MARINE MAMMAL SLEEP IN THE WILD

Tech ID: 32769 / UC Case 2021-586-0

BACKGROUND

Understanding of biophysical processes in marine mammals, like elephant seals, is limited by our ability to monitor wild behavior. Elephant seals spend the majority of their life at sea, reaching depths of over 1500 m that challenge even the most recent advances in biometric monitoring devices. Many existing devices for monitoring electrophysical signals in seals are also invasive and require skin or skull perforation for electrode implantation. A UC Santa Cruz researcher has designed a water-resistant, non-invasive device that can withstand pressures of 3000 psi and is capable of monitoring over twenty electrophysiological signals in wild elephant seals.

TECHNOLOGY DESCRIPTION

The device uses surface-mounted electrodes for neurological signal detection in marine mammals. A neoprene headcap is used together with neoprene patches to place electrodes, which can detect markers such as brain activity, heart rate, eye movement, and muscle movement. The electrodes are routed to a portable, water-resistant data logging device.

Nine different electrophysiological channels (electroencephalogram, electrooculogram, electromyogram, and electrocardiogram) are monitored and can be paired with other channels for a range of biometric measurements.

APPLICATIONS

- Biotelemetry measurements in marine mammals, particularly elephant seals

ADVANTAGES

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OTHER INFORMATION

KEYWORDS

Marine Mammals, Physiological Measurements, Biotelemetry, Biometric, Electrophysiology

CATEGORIZED AS

- **Agriculture & Animal Science**
  - Devices
- **Sensors & Instrumentation**
  - Environmental Sensors
  - Scientific/Research

RELATED CASES

2021-586-0

- Non-invasive
- Pressure-proofed to 3000 psi (depths of roughly 1 mile)
- Ethical

INTELLECTUAL PROPERTY INFORMATION

Country	Type	Number	Dated	Case
United States Of America	Published Application	20230108715	04/06/2023	2021-586

Additional Patent Pending

RELATED MATERIALS

- Brain activity of diving seals reveals short sleep cycles at depth - 04/20/2023

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