UNIVERSITAT DE BARCELONA

TECHNICAL SPECIFICATION SHEET FOR THE CONTRACTING OF THE SUPPLY OF TECHNICAL EQUIPMENT NECESSARY FOR THE RESEARCH OBJECTIVES PF THE PROJECT "GESTION PARTAGÉES ET HARMONISÉE DE LA BIODIVERSITÉ MARINE TRANSFRONTALIÈRE (RESMED+)" DE LA UNIVERSITAT DE BARCELONA

FILE 2024/69

1. Subject of the contract

The purpose of this document is to establish the technical specifications governing the procurement procedure for the supply of necessary equipment (UB) for the RESMED+ project funded by the European Union under the Interreg POCTEFA EFA070/01 program.

The RESMED+ project aims to improve the quality of ecosystems and biodiversity through the implementation of conservation and management actions that include essential habitats for species at a regional and cross-border scale between Spain and France, with the participation of all territory managers and stakeholders.

The RESMED+ project will investigate the movement of fish species of interest through the acoustic telemetry network created in the REDMED project, extending the study to new habitats such as seagrass meadows, coastal lagoons, estuaries, continental shelf, deep canyons, ports, and artificial reefs, with monitoring of new emblematic pelagic species (sharks, rays, etc.).

This information will be essential for designing effective management measures that integrate spatial regulations and fishing measures at the cross-border regional level.

The object of this tender is the acquisition of the followuing equipment:

- Lot 1: Supply of acoustic telemetry tags.
- Lot 2: Supply of hydrophone receivers for acoustic telemetry.
- Lot 3: Supply of satellite telemetry tags.
- Lot 4: Supply of data storage tags with temperature and depth sensors.
- Lot 5: Supply of Loggers for water turbidity measurement

For the proper development of the project, the acquisition of the necessary equipment is essential. This equipment must be used for tagging and tracking the movement of the studied species, as well as for measuring oceanographic variables to characterize pelagic habitats.

2. Technical Requirements of the Equipment to be Supplied

Below are briefly outlined the minimum technical specifications that the supply of equipment for the different lots must comply with.

Lot 1: Supply of acoustic telemetry tags

Tags for fish marking with acoustic telemetry. They must be identification tags without sensors, encoded with Open Protocol, emission frequency of 69 kHz, Tx protocol 64K, of various sizes according to the sizes and species to be marked:

- 100 units of 13 mm diameter, 5 cm length, maximum weight 14 grams, emission power >155 dB, average emission interval 180 seconds, battery life >51 months.
- 20 units of 16 mm diameter, 7 cm length, maximum weight 29 grams, emission power >157 dB, average emission interval 180 seconds, battery life >134 months.
- 20 units of 9 mm diameter, 3.5 cm length, maximum weight 5.3 grams, emission power >145 dB, average emission interval 180 seconds, battery life >37 months. Delivery time 8 weeks.

Lot 2: Supply of hydrophone receivers for acoustic telemetry

"It is necessary to acquire two different types of digital acoustic receivers:

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1) 20 units of digital acoustic receivers with release mechanism, with the following characteristics:

- Compatible with the Open Protocol system as well as R64K and R256 protocols. Detection frequency range: 63-77 KHz
- Capable of detecting up to 3 frequencies simultaneously
- Battery life (1 frequency): up to 24 months
- Operating depth: up to 500 m
- Storage memory: >30 MB
- Storage capacity for up to 3 million detections
- Communication capability with the surface unit, including data transmission such as distance, receiver status updates, number of detections, battery charge, and inclination.
- Release function operated by motor and remote control from the surface.
- 30 spare release mechanisms.

2) 12 units of digital acoustic receivers (without release mechanism), with the following characteristics:

- Compatible with the Open Protocol system as well as R64K and R256 protocols. Detection frequency range: 63-77 KHz
- Capable of detecting up to 3 frequencies simultaneously
- Battery life (1 frequency): up to 24 months
- Operating depth: up to 500 m
- Storage memory: >30 MB
- Storage capacity for up to 3 million detections

Communication capability with the surface unit, including data transmission such as distance, receiver status updates, number of detections, battery charge, and inclination. These receivers must have a surface communication system for the manual detection of acoustic transmitters, communication with the receivers to receive information about their status and distance, and to emit the signal for the release of receivers with a release mechanism.

- Delivery time: 8 weeks.

Lot 3: Supply of satellite telemetry tags

15 Satellite telemetry tags for high-precision horizontal tracking of marine animals. These tags must emit a signal to the surface and send transmissions to the ARGOS satellite system. The tags must allow for location determination within a short time interval with an accuracy of up to 250 meters and must meet the following characteristicsSensor de temperatura i submergibles fins a 2.000m.

- Possibility of various different configurations, including floating mount anchored to the animal with specific anchorage.

- Recovery Pinger: SPOT tags equipped with a UHF pinger. This optional pinger can be activated to send low-power, unmodulated "pings" while the tag is at the surface. The tags and animals can be located and actively tracked using a directional antenna and a receiver.

- Highly customizable data collection and transmission scheduling: possibility to customize and prioritize data transmissions to capture the most important information for the project, with the ability to extend the tag's lifespan by focusing on specific seasons or times of the year and optimizing transmissions for when satellites are in view

- Availability of a data visualization portal with streamlined processes for data acquisition, conservation, and exchange, with tools to program the tags and to collect, prepare, analyze, and present the data returned via ARGOS. Ability to view a live map of the signals, with the positions color-coded by time since deployment. Ability to configure a live KMZ for viewing the data in a visualization browser.

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- Delivery time: 10 weeks.

Lot 4: Supply of data storage tags with temperature and depth sensors.

15 High-performance data storage tags with long-lasting battery and high-pressure tolerance. The temperature and pressure data storage tags are designed as archival devices for studies on the migration and diving behavior of fish and marine animals over an extended period. The tag can be implanted or externally attached to the study subjects.

Characteristics:

- Fish archival tag that needs to store 1.4 million measurements in total, within a user-defined interval, with a minimum interval of 1 second.
- Memory and autonomy should last for 3.5 years if displayed at 5-minute intervals.
- The archival tag should be configurable to record at various intervals, switching between different intervals during the measurement period.
- Ability to record a customized text on the tags for their retrieval.
- Sensors: Temperature (resolution < 0.035 ºC) and pressure (resolution 0.03% of detection range).
- Maximum size (Diameter x Length): 13 mm x 40 mm
- Maximum diameter: 15 mm at the closing end.
- Data retention: 25 years
- Real-time clock. Accuracy: +/-1 min/month.
- Communication box, wireless transmission when DST is in the box. Connection to PC: via USB cable.

- Delivery time: 6 weeks.

Lot 5: Supply of Loggers for water turbidity measurement

3 units of loggers for water turbidity measurement for characterizing the water column of submarine canyon zones.

- Turbidity sensor with immersion range of 1,700 dbar.
- Capacity to store 240,000 readings.
- Sampling from 10 seconds to 24 hours.
- Data download via USB-C.

- Delivery time: 4 weeks.

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3. Minimum Warranty and After-Sales Service for the 5 Lots

The warranty for the equipment described in this tender will last a minimum of one year, and will cover any manufacturing and operational defects. Once the equipment has been delivered, the acceptance document will be signed, from which point the specified warranty period (1 year) will begin. The warranty will include:

- Replacement of defective components.
- Telephone or email assistance for problem resolution within a maximum of 72 hours from the time the inquiry is made.
- In case repair is necessary during the warranty period, the cost of spare parts, fees, and travel expenses of technical personnel will be borne by the awardee.
- In the event of a serious system failure, representing a malfunction that prevents the total or partial operation of the equipment for more than 15 calendar days, replacement equipment will be provided during the repair period of the device.

4. Technical Service and Maintenance for the 5 Lots

The contractor must have a technical service and maintenance provided by qualified personnel to resolve any issues that may arise during the normal use of the equipment. The minimum conditions requested are:

- A fast technical support hotline, with a response time within 72 hours.
- Duration of the preventive maintenance plan (preventive maintenance, corrective actions, verifications, etc.). Supply and replacement of components not covered by warranty.

The technical service response time for resolving equipment malfunctions within a maximum period of 2 weeks. If required, technician travel and component repair/replacement time will be included in this service. The response time is understood as the time it takes for the technical service to resolve the malfunction from the time it is reported until it is completely resolved.

Barcelona,

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