UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OCEANIC AND ATMOSPHERIC RESEARCH
Office of Ocean Exploration and Research
Silver Spring, MD 20910

May 1, 2023

NOAA Fisheries
Office of Protected Resources
ESA Interagency Cooperation Division
1315 East-West Hwy
Silver Spring, MD 20910

Attn: Ms. Lisamarie Carrubba

Re: Request for Project Specific Review under section 7(a)(2) of the Endangered Species Act for NOAA's Office of Ocean Exploration and Research's Marine Operation Activities by the E/V *Nautilus*

Dear Ms. Carrubba,

The NOAA Office of Ocean Exploration and Research (OER) proposes to fund, authorize, and carry out marine operation activities in support of initiatives including Nippon Foundation-GEBCO Seabed 2030 initiative and the National Strategy for Ocean Mapping, Exploring, and Characterizing the United States Exclusive Economic Zone (NOMEC), which looks to produce a bathymetric map of the world ocean floor by 2030. We are submitting a project specific review in accordance with NMFS' Programmatic Concurrence Letter for the Office of Ocean Exploration's Marine Operation Activities (OPR-2021-03453) for activities funded by NOAA OER through the Ocean Exploration Cooperative Institute (OECI). We have determined that the proposed actions may affect, but are not likely to adversely affect, the ESA-listed species and critical habitat included in the table(s) by the use of similar additional technologies that were not included in the previous consultation. Our supporting analysis is provided below. We request your written concurrence with our determinations.

Pursuant to our request for project specific information, we are providing, enclosing, or otherwise identifying the following information:

- A description of the action to be considered;
- A description of the action area;
- A description of any listed species or critical habitat that may be affected by the action; and,
- An analysis of the potential routes of effect on any listed species or critical habitat.

The Programmatic Concurrence Letter for NOAA Office of Ocean Exploration's Marine Operation Activities was issued for the issuance of permits for marine operation activities to collect oceanographic data was issued on March 14, 2022 (OPR-2021-03453). Since the Programmatic Letter of Concurrence was issued, additional technologies are proposed for use during OER's marine activities and operations.

Mapping Operations

Vessels that OER will use for its proposed marine operation activities have a series of scientific ocean mapping sonars, each with a unique exploration application. In addition to the previously listed hull-mounted multibeam sonars, OER supported activities will also use a Kongsberg EM124 multibeam sonar. An OER partner is also testing the use of a new type of ADCP during the 2023 field season - a Kongsberg EC150-3C combined ADCP and echosounder transducer. These are additional or slightly modified versions of existing capabilities (hull mounted multibeam sonars, ADCPs, and single beam echo sounders) already evaluated in OPR-2021-03453.

Profilers

Profilers like the Hadal Profiler are untethered systems that move through the water column carrying a variety of instruments that have the capability to sample through the water column. These instruments often include, but are not limited to, passive *in situ* sensors, cameras, lights, sonars, and communications and positioning equipment similar in scope to AUVs/ROVs discussed in the previous programmatic consultation. Profilers do not touch the seafloor, although they do drop ballast that will remain on the seafloor. The adaptability that profilers like this have allowed scientists to customize the instruments and targets during operations in order to collect a variety of data in the water column.

Hadal Profiler: The Hadal Water Column Profiler is a free-falling profiler that is rated to 11 kilometers which measures vertical profiles of turbulent microstructure (mixing), temperature, conductivity, dissolved oxygen, horizontal velocity, and 200 kHz bioacoustics backscatter. The profiler enables high quality sampling of physical, chemical and biological sampling in order to create depth profiles allowing researchers to observe important physical and chemical changes in the ocean environment while in the water column. The sonar is pointed horizontally and transmits about 200 meters. The sonar is at 200 kHz which is above the frequency that marine mammals typically communicate with and is even above the frequencies normally used by the ships ADCP or other sounders. It is always emitting during a deployment including transit. In addition to collecting environmental data, the Hadal water column profiler has the capability to record videos providing a visual observation of the environment the samples are collected. Two small lights illuminate a small field of a view a few meters around the camera. Rated to reach 11,000 meters (36,089 foot), the Hadal profiler deployments are scheduled to occur at a maximum depth of 5,500 meters (18,044 foot) targeting depths between 1,000 and 2,000 meters (3,280 to 6,561 foot) in the water column. Most deployments will be no more than 4 hours. There is a small water sampler in the tail cone that collects eleven 150 milliliter samples throughout the water column.

The Hadal Water Column Profiler is 540 millimeters (21.3 inches) in diameter, 4015 millimeters (13 foot) in length, and weighs 560 kilograms (1234.59 pounds) in air. The profiler is free floating and has no attached tether or line. The ascent is faster than the descent at around 1.5 meters per second. The profiler descends at a slower rate at around 0.75 meters per second. Ascent is enabled by release of raw steel ballast, making the profiler buoyant. The ballast for each cast consists of four approximately 8 inch long 3-½ inch diameter steel rods. Depending on water depth and task we might either drop the ballast at about 1000 meter depth, or use the instrument's altimeter to release the ballast about 50 meters (160 feet) to 10 meters (30 feet) above the bottom. The weights are able to be released in multiple ways, including a mechanical corrosive link or based on an altimeter. "Isofloat " flotation by the carbon reinforced microsphere is used to eliminate the risk of implosion. The back half of the instrument contains a single machined isofloat cylinder. The floatation is compressed due to the increasing pressure resulting in the instrument losing 100 newtons of buoyancy at 11,000 meter (36,089 foot) depth compared to the surface.

As the profiler is untethered, once the profiler arrives back at the surface, the ship has to maneuver to recover it. Once the Hadal Water Column Profiler is on deck the data can be downloaded and items like the rechargeable battery can be replaced. While on deck, a full freshwater rinse and inspection of potential invasive species is done between deployments.

Remotely Operated Vehicle (ROV)- based Push Core Operation

The same PDCs as are currently listed in OPR-2021-03453 apply to these ROV operations. During ROV operations, sediment samples are acquired using a push core to learn more about the seafloor. Coring is used to collect small amounts of sediment samples from the ocean floor. Sediment cores capture stratigraphic layers with depth while preserving the depositional sequence. Use of a ROV (e.g. ROV *Hercules*) as the sampling platform enables scientists to target specific sites, ensure accurate sampling position, and acquire undisturbed samples. Push cores are specifically designed clear plastic tubes that are pushed into the sediment surface by the ROV's hydraulic manipulator arms. The core is then pushed into a holder or "quiver" with a rubber stopper on the bottom to contain the sediment until the ROV is recovered at the surface. Once the sediment sample is collected, the enclosed sample is placed in a sample basket/box on the ROV and is transported back to the ship. A scoop may instead be used to collect sediment when layering is not important, or a slurp hose will be used when collecting rubble for analysis. In all cases, humans are constantly observing the surrounding environment and guiding these targeted sampling operations.

Uncrewed Aerial System (sUAS)

Uncrewed aerial system vehicles and associated equipment do not carry a human operator but instead are remotely piloted or fly autonomously. They are very effective tools for gathering data from remote locations and are relatively low cost. "Small UAS" follows suit with the Federal Aviation Administration's (FAA) definition of "small unmanned aircraft" (14 CFR § 107.3), which weighs "less than 55 pounds on takeoff, including everything that is on board or otherwise attached to the aircraft". sUAS can be outfitted with a variety of sensors and systems including passive sensor arrays, visual imaging systems, light or laser based imaging systems; navigation, positioning and communication lights and systems.

DJI Matrice 300 a small self-contained Uncrewed Aerial System (sUAS) that would be launched from a vessel used during OER's proposed marine operation activities. sUAS deployments will occur near or onshore land to map surrounding coral reef benthic environments shallower than 200 m. The aircraft is configured with a transponder and FAA regulated navigation lights, beacon, and optical strobe for daylight and nighttime operations. At around 19.8 lbs (9kg), the Matrice is capable of reaching a maximum speed of 23 meters per second (max ascent = 6 m/s; max descent = 5 m/s) with an average mission speed of 1 to 3 meters per second. During operation, the sUAS surveys would conduct mapping at 400 feet (class G airspace). An optional higher mapping flight (~8000 ft) may be conducted to capture the entire island in a single frame. Aircraft maximum speed is up to 22 mph (35 mph gusts) with operations stopping when winds are outside this range. The sUAS aircraft has 16 cameras, obstacle detection and autonomous avoidance capabilities including a radar in case of birds. The sUAS will also be outfitted with MiDAR technology.

The Multispectral Imaging, Detection and Active Reflectance (MiDAR) transmitter and receivers provides high signal to noise ratio (SNR) multispectral imaging at a high frame rate capabilities to produce 3D multispectral scenes and high resolution underwater imagery of benthic systems as part of future scientific airborne field campaigns. The transmitter emits a coded narrowband that generates video, real time radiometric calibrations, and high bandwidth simplex optical data link under a range of ambient irradiance conductions. An active array of 7 channel multispectral high-intensity light-emitting diodes (MiDAR transmitter) together with the high frame rate of the NASA Fluid Cam NIR (MiDAR receiver) results in the unique color band signatures used for the multispectral video reconstructions. The resolution range for the 7 channels during testing illustrated a high signal-to-noise ratio (SNR) active multispectral imaging from 405-940 nm at 2048x2048 pixels and 30 Hz. A higher channel instrument is currently being developed. MiDAR has a vast potential to include various technologies and instruments to create better resolution of images and videos captured by MiDAR. Incorporated in the MiDAR is a small unmanned aerial system (sUAS)-based FluidCam imaging system that captures images at two FluidCam's rated at different ranges from 380-720 nm color and 300-1100 nm panchromatic. A visible band of UV light will be produced (non-ionizing UV light from deep purple [415 nm] to violet [385 nm]). Harassment to land-based or avian species is not likely to occur given the wavelengths and intensities are well below the total downwelling irradiance that naturally occurs from the sun.

The FluidCam is a portable imaging system that provides scientific capabilities for remote sensing applications that is small enough to be mounted on the sUAS-based gimbles (10cm x 10cm x 15cm) and comes with a fully integrated onboard computing system. The MiDAR fluid lensing provides 13 active distinct spectral bands from UV-NIR (365-880nm) to target objects >15 meter depth in 3D with centimeter resolution. Deployments/flights would occur for up to 6 hours a day over the course of 8 days.

Landers

Similar to profilers, landers are used for various *in situ* measurements through the water column during descent and ascent, and for specified periods of time at one location on the seafloor. Their specific scientific payload is determined by what the researchers want to collect during the project. They are typically deployed in a free fall mode, where the lander is released from the vessel at the surface. The lander is capable of carrying telemetry, camera, lights, and *in situ* sensors (that are typically passive). Once the lander has landed on the seafloor and completed its mission collecting measurements, the weights are released resulting in the lander ascending to the surface by its floatation system.

<u>Deep Autonomous Profiler (DAP) lander</u>: The Deep Autonomous Profiler (DAP) is a free falling lander that operates down to 11 km and includes a CTD rosette. As described in the OPR-2021-03453 programmatic consultation, CTD rosette's measure hydrographic profiles via a suite of *in situ* sensors, and collect water samples, providing information on physical oceanographic properties, water composition, and biological communities. At its base the overall footprint of the lander is within a 2 meter diameter circle with a height around 3.5 meters. The DAP has a height of 3.2 m (10.4 foot) and mass of approximately 1400 kg (3086.4 pounds) in empty air and 1700 kg (3747.8 pounds) when full of water.

Similar to other landers, the DAP uses syntactic foam that provides buoyancy for the ascent and drop weights for descent. The foam flotation is space efficient and foam does not require routine inspections for internal spalling that can occur in glass with repeat cycling to high pressure. DAP was designed to be deployed and recovered as a single unit (which is not possible with designs that use a vertical string of spheres connected with a line or chain). Unlike other deep-sea systems, the DAP focuses on water-column profiling and sampling. The system provides a full water-column profile and is the first to be able to efficiently retrieve large volume hadal water samples. It is rated for a full ocean depth of 11 km and can be reconfigured with different sensors or sampling devices. The adaptability and efficiency allow for a broad range of oceanographic studies in deep-water environments. Fiberglass grating on the lower platform, plastic bottle supports, and bottom skids were selected to reduce the in-water weight.

Titanium electronics bottles in the rosette are tested to 11 960 dBar in order to house the embedded Raspberry Pi computer and power circuitry. This computer logs data from the SBE 9plus CTD and SBE 43 oxygen sensor, sends commands to the SBE 32 sampler carousel to trigger the sample bottles, and controls the burn-wire release. Power for a nominal 24-h operating time is provided by a 24-V, 40-A h oil-filled DeepSea Power and Light SeaBattery.

An oceanographic vessel is required for deployment and retrieval. Launching the vehicle takes a couple of minutes. The descent weights are put over the side of the ship and held with a temporary slip line attached near the top of the expendable chain. The DAP Lander is positioned at the edge of the deck with a standard pull-pin release connected to the vehicle's titanium lifting bale. The top end of the weight chain attached to the release rigging and the slip line is released transferring the load to the DAP Lander. The DAP Lander is then put over the side of the ship and released with the pull pin.

After the lander has been deployed from the ship, it acquires data during its descent to the seafloor. By using drop weights, the profiler descends at a nominal speed of 60 m min through the water column collecting CTD data. The DAP is an untethered system that is able to autonomously collect temperate, salinity, oxygen profiles, and water samples via the 24-bottle Sea-Bird SBE 32 rosette with 10- or 12-L Niskin bottles. The system is controlled by an onboard data collection and sampling algorithm that enables present and adaptive sample collection. Adaptive sampling methods allow for the sampler or vehicle to make data-driven decisions in the environment in real-time to locate, sense, and sample interesting environmental features.

When it reaches the bottom, a timer is activated and an onboard algorithm processes the descent profile to set depths for any sample bottles set with an adaptive criteria. Bottom water samples can also be collected. The on-bottom time varies from 5 min to 20 hours, depending on the objective of each dive and the amount of time allocated to the ascent and descent. A burn wire that is activated by a software timer is used to release steel drop weights, typically 140–180 kg (308- 396 pounds) per dive, so the Lander can float back to the surface. Energizing the burn-wire circuit causes the wire to dissolve in seawater and release the weights. Via an acoustic command, the two Benthos can be activated through an acoustic command sent from a shipboard transducer and will send a confirmation status signal to indicate they have been released. An additional fail safe release mechanism is a passive corroding galvanic link. This link slowly dissolves when exposed to saltwater and can be sized for different dive durations. In the event of a burn-wire software failure and a loss of acoustic communication, the galvanic link will eventually corrode to release the weights and enable the DAP to return to the surface.

Four independent release mechanisms drop the weight, which are located below the vehicle's base on a chain. The weights hang from a 3/16 inch thick non-galvanized chain that is about 6 feet long. The weights are hung approximately 3 m below the vehicle, providing enough distance for the impact of the weights to slow the momentum of the lander before landing on the bottom. This distance also provides some forgiveness if the bottom is very soft and significantly reduces the chance of the vehicle becoming stuck in the sediment.

Ascent is at a nominal speed of 60 m min. When the DAP surfaces, a radio beacon, Iridium beacon, strobe, radar reflector, and flag are used for recovery by the ship. At 11,000 m, the total time in the water could range from ~6.5 hours to ~27 hours, including descent and ascent. . Longer-duration dives with burst sampling and computer power-downs may be possible but have not been implemented yet. Once back onboard, the full equipment will be rinsed with freshwater and air-dried, and inspected for invasive organisms between deployments.

Spectrometer

InVader Raman Spectrometer: is NASA's most advanced subsea sensing payload. It contains a laser Raman spectroscopy/fluorescence instrument capable of *in-situ* underwater bio/geo/mineralogical characterization and analyses of materials including rocks, sediments, fluids, precipitates, and targeted seafloor geology. By itself, the InVader system is mounted to a remotely or autonomously operated sled that can perform unprecedented, high resolution in-situ laser measurements at the current maximum depth of 1500 meters (4921.26 foot). The system can also be integrated into a ROV or AUV for exploring deep-sea seamounts and ridges at depths ranging between 200-1,500 meters (646- 4921 foot). Data is sent back to the ship over the RCA fiber-optic cable for immediate analyses.

InVADER features the first long-term-resident, real-time, combined imaging and spectroscopy payload for underwater sensing. The sensor package is flexible to allow targeted study of regions of ~2m × 2m with a footprint of less than 10mm at 5 meters working distance. The area imaged will be a 20 cm wide swath in the direction of the vehicle above the seabed at 4 to 5 meters altitude. The laser is on during analysis and turns on/off at the operators discretion. Each analysis is conducted in less than 1 minute. The laser's irradiance is very low and would not result in animals being harmed during operations. Operators will only turn on the laser when the area is clear of fish and other marine life. There are several interlocking mechanisms in place that prevent the laser from accidentally triggering and being turned on. In the future, the system may be integrated into an AUV that would also be operated 4 to 5 meters above the seafloor and image a ~20 cm swath in a "mow-the-lawn" approach to mapping. In order for an ESA-listed species to to be harmed (i.e. blinded) by the laser, the animal would have to be located within the 20 cm swath of seafloor being imaged at the time the AUV passes above, and look directly in the direction of the laser; the likelihood of these factors aligning is extremely low and therefore discountable. InVADER puts forward a zero environmental impact exploration platform service based on autonomous non-destructive and non-invasive mineral data and deepsea catalog of habitats and benthic communities characterization.

Conservation Measures and BMPs

All of the Project Design Criteria that are identified in NOAA OER's Programmatic ESA Consultation (OPR-2021-03453) are relevant for the FY23 operations by the E/V *Nautilus***.** Additionally, the following best management practices will be incorporated into all Project Design Criteria.

ROV-Operations *(The same PDCs in OPR-2021-03453 for ROV operations apply)*

- Sediment coring:
    - Sediment cores will not be taken on coral reefs, underwater cultural heritage, obstructions, or on hard bottom areas. They may be taken from nearby sedimented areas.
    - ROV operators will ensure the corer only captures samples from sedimented areas, and is not deployed on top of any animals that can reasonably be avoided (such as echinoderms and bottom dwelling fish).
- InVader Raman Spectrometer:
    - Operators will continuously monitor the surrounding environment and will only turn on the laser when the area is clear of fish and other marine life that can reasonably be avoided.

Small Unmanned Aircraft Systems (sUAS):

- UAS operations will be conducted by operators licensed under FAA part 107 rules, and will adhere to part 107 operating requirements (https://www.faa.gov/newsroom/small-unmanned-aircraft-systems-uas-regulations-part-107).

- UAS operators will continuously monitor the surrounding environment for avian species. UAS will not be deployed unless the aerial environment is clear and no avian flock is apparent within 100 meters.
- Once deployed, the UAS shall be continuously monitored by operators. If avian species or a flock are observed in the vicinity, these operations may continue only when that activity has no reasonable expectation to adversely affect the animal(s).

Action Area Habitat

The FY23 operational area for E/V *Nautilus* will include the Central and Eastern Pacific (**Figure 1**). Locations of interest include the U.S. EEZ surrounding: the main Hawaiian Islands, including Papahanaumokuakea Marine National Monument and the Geologists Seamounts; the Kingman Reef and Palmyra Atoll, Johnston Atoll, and Jarvis Island units of the Pacific Remote Islands Marine National Monument; and vessel transit areas between ports including but not limited to ports of call. Transit mapping operations are planned between all areas mentioned, including the high seas. However our analysis of effects of OER supported marine operations activities on ESA-listed species address all U.S. waters 200 m and deeper. Our analysis of the effects of sUAS activities address all coastal waters shallower than 200 m.

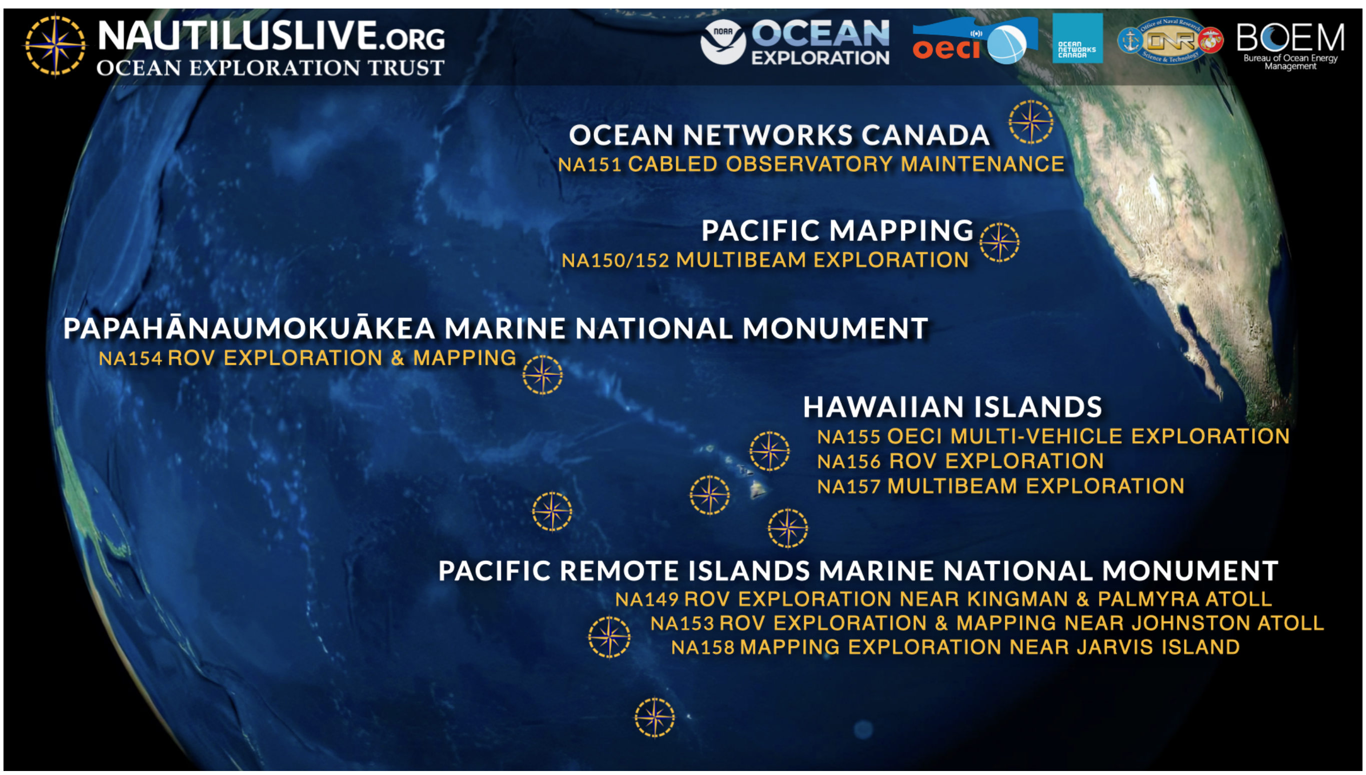

Figure 1. Areas of interest during FY23 operations by the Exploration Vessel *Nautilus*.

Effects Determination

Our analysis of potential effects is in accordance with NMFS' Programmatic Letter of Concurrence for the Office of Ocean Exploration's Programmatic ESA Section 7 Consultation (OPR-2021-03453). The same stressors identified in OPR-2021-03453 (Operational noise and visual disturbance from vessels and equipment; elevated sound pressure levels from the use of active acoustics; vessel and vehicle strike; entanglement in gear; expending steel ballasts and lead weights; and vessel waste and discharge) apply to this action, and the same rationale for why these potential effects are either insignificant or discountable apply to the new project activities. The following activities were not evaluated as part of OPR-2021-03453.

During ROV operations, a sediment corer will be used to obtain samples of the seafloor. It only samples the top few inches of sediment. At most, a few cups of sediment would be collected during the bottom sampling activities during any one dive. ROV operations were evaluated in OPR-2021-03453, however sediment coring activities were not. ROV operations are continuously monitored, and humans will be conducting the sampling from the ship. They will ensure the corer only captures samples from sedimented areas, and is not deployed on top of any animals that can reasonably be avoided (such as echinoderms and ESA-listed species of bottom dwelling fish). These operations will not provide any greater disturbance to ESA listed species in the area than that which already occurs from the presence of the ROV. Any disturbance would be short lived and limited to a very small space and therefore insignificant and too small to measure.

The InVader Raman Spectrometer sensor can be operated from a remotely or autonomously operated sled or attached to the ROV/AUV. The same rationale for why the risk of entanglement in gear are discountable as described in OPR-2021-03453 for CTD, UCTD and ROV operations apply to these activities. Considering the combinations of continuous human monitoring of the area being documented by the Spectrometer in real-time; the very brief time (<1 minute) of each analysis; the very small footprint and limited number of deployments; very low level of irradiance of the Spectrometer; the dispersed distribution of ESA-listed species in the action area; and the free ranging nature of ESA-listed species (in waters deeper than 200 m), we have determined that the potential for adverse effects to an ESA-listed animal as a result of exposure to the InVader Raman Spectrometer are so small they are discountable.

Profilers like the Hadal Profiler do not pose an entanglement hazard because they have no lines or cables attached that could present such a hazard. Profilers collect data primarily using passive sensors, or acquire small samples of water for analysis. The bioacoustics sonar operates at 200 kHz which is above the hearing range for marine mammals (7 Hz to 160 kHz), sea turtles (50 Hz to 1.6 kHz) and fish (0.5 to 1.5 kHz) and therefore has no impact on these types of ESA-listed species. Profilers do not contain materials or chemicals that pose a pollution hazard. Operations do include deployment of four (~8" long x 3.5" diameter) steel rods released at 50 to 10 m off bottom, or from 1000 m depth. The same rationale for expending steel ballast and weights as described in OPR-2021-03453 for why these potential effects are discountable apply to both Profiler and Lander activities.

Landers like the Deep Autonomous Profiler (DAP) Lander use acoustic range tracking systems (ARTS) to monitor and locate the system while underway. The DAP Lander ARTS is operated from 9 to 14 kHz. No other active acoustics are onboard the lander. ARTS' include, and are operated the same general way as, the USBL system already described and evaluated in OPR-2021-03453. The ARTS with the DAP Lander is outside the hearing range for sea turtles and fish. Although such frequencies are within the hearing range of marine mammals, these systems are commonly used by researchers and have no known adverse impact on marine life. DAP Lander operations will adhere to the relevant PDCs already identified in OPR-2021-03453, especially those to minimize temporary disturbance from human activity and minimize entanglement before and during deployment. The combination of adherence to relevant PDC's (especially monitoring, adherence to the safety zones, and delaying in water work); the brief, intermittent and directional nature of ARTS pings; the small harassment ensonified zone; the dispersed distribution of ESA-listed species in the action area; the low number of Lander deployments; and the tendency for most marine mammals to avoid and swim away from obtrusive sounds makes it is highly unlikely and thus discountable that an ESA-listed species would be exposed to elevated sound pressure levels to from these operations to result in behavioral harassment or injury. Pollution is possible from the oil-filled DeepSea Power and Light (DSPL) SeaBattery. The 11,000 m rating of this battery, DSPL's 30 year track record of success in developing deep-sea capable systems; routine monitoring and maintenance of the DAP Lander; and the small amount of oil relative to the large marine environment make it highly unlikely and thus discountable that a system failure would result in pollution to the marine environment that would affect an ESA-listed species. If a system failure did occur, the pollution would not rise to the level of causing a measurable effect on an ESA-listed species or critical habitat.

sUAS operations will occur from the primary research vessel and the uncrewed system is configured with a transponder and FAA regulated navigation lights, beacon, and optical strobe for daylight and nighttime operations. Aerial operations will primarily be conducted at a minimum of ~400 ft, and possibly as high as ~8000 ft, over the course of eight days. The time for each deployment would be up to 6 hours a day with operators watching for land-based or avian species during operations. Harm and harassment to ESA-listed species due to visual disturbance from MiDAR technology is not likely to occur given the wavelengths and intensities are well below the total downwelling irradiance that naturally occurs from the sun. The aerial nature, and altitude of sUAS and MiDAR operations ensure marine species will not be disturbed as a result of exposure to operational noise. These operations otherwise do not pose a risk to marine species. The sUAS is outfitted with obstacle detection and autonomous avoidance capabilities including a radar, making harm to avian species due to a vehicle strike highly unlikely and thus discountable. Disturbance from operational noise is not likely to rise to the level of a measurable effect on an ESA-listed avian species given continuous monitoring by operators, limited duration of the survey, the brief time of each deployment, the small footprint of operations; the dispersed distribution, mobility and free ranging nature of ESA-listed avian species in the action area. A permit will be obtained from the USFWS for these operations prior to them being conducted.

Conclusion

NOAA OER has reviewed the proposed project for its effects on ESA-listed species and their critical habitat. Based on the analysis here and covered under NMFS' Programmatic Concurrence Letter (OPR-2021-03453), and with adherence to relevant PDCs and Best Management Practices, we have determined that the proposed marine operation activities are not likely to adversely affect any listed species or critical habitat under NMFS's jurisdiction. We have used the best scientific and commercial data available to complete this analysis. We request your concurrence with this determination.

David Turner

Sincerely, 05/02/2023
David Turner, Deputy Director
NOAA Office of Ocean Exploration and Research

cc: Amanda Maxon
Environmental Compliance Specialist
NOAA Ocean Exploration & Research