

NOAA

Office of Marine and Aviation Operations (OMAO)

An Update on NOAA's Fleet Modernization and Recapitalization

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Mission and Vision



Mission

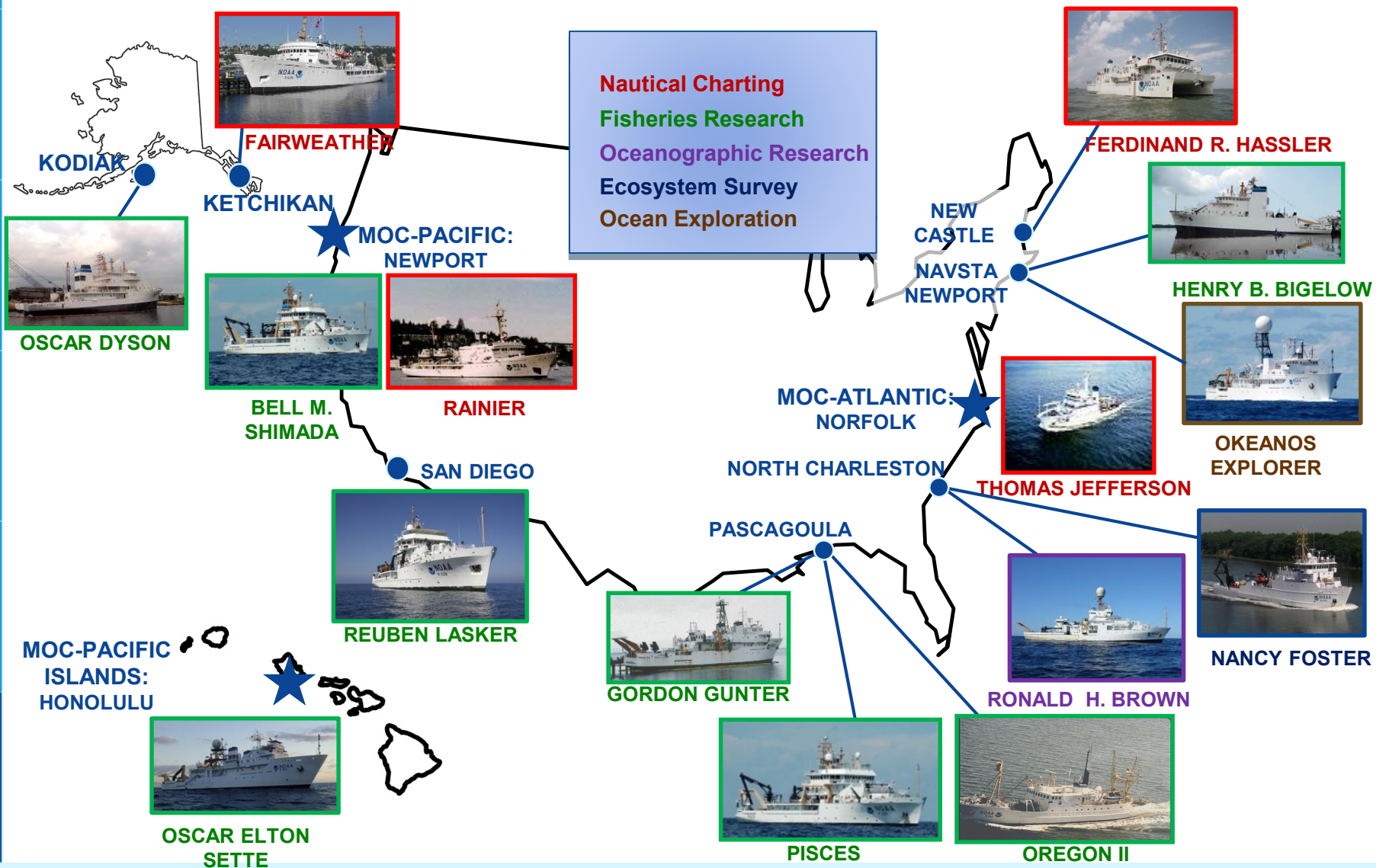
Optimize NOAA's observational platforms and unique workforce capabilities to meet NOAA's science, service, and stewardship missions.



Vision

Protect environmental security through intelligence and stewardship.

OMAO Ships and Homeports





NOAA Ship Recapitalization

2016 Fleet Plan

- Identified 4 new vessel classes
- Emphasis on multi-mission use

Class A – Primary: Oceanographic Monitoring, Research & Modeling;
Secondary: Assessment and Management of Living Marine Resources (no trawl), Charting and Surveying

Class B – Primary: Chartering and Surveying
Secondary: Assessment and Management of Living Marine Resources, Oceanographic Monitoring, Research & Modeling

Class C – Primary: Assessment and Management of Living Marine Resources (near-shore, shallow-draft)

Secondary: Charting and Surveying

Class D – Primary: Assessment and Management of Living Marine Resources (near-shore and deep ocean, longer endurance)

Secondary: Charting and Surveying, Oceanographic Monitoring, Research



Class A: NOAA AGOR Variant (NAV)

Class A (NAV)

Primary mission: Oceanographic monitoring, research and modeling. Multi-purpose Oceanographic vessel based on the AGOR 27/28 design.

Contract Awarded to Thoma-Sea Marine Constructors LLC, in Houma, Louisiana on Jan 31st, 2021.

The NOAA AGOR Variant (NAV) vessel acquisitions through the use of an agreement with the United States NAVY (USN), Naval Sea System Command (NAVSEA).

Status Update: In the Detailed Design and Construction phase.

Quantity: 2 ships – *OCEANOGRAPHER* and *DISCOVERER*

Characteristics & Capabilities:

Endurance – 40 days

Sustained Speed – 12 kts

Range – 10,000+ nm

Propulsion – Siemens Blue Drive Plus-C

Over-the-side handling gear – main crane,

A-frame, hydrographic winches

Extensive lab suite

Nitrox-capable Diving

Space for 5 aft & 2 fwd Scientific vans





Class B

Class B

Primary mission: Charting and Surveying, Organic handling of multiple launches or small craft, both manned and unmanned, and Infrastructure to support unmanned systems.

Intended to be a NOAA led acquisition.

Status Update: Draft Request For Proposal (RFP) received Industry Comments and preparing for solicitation.

Quantity: 2 – 4 vessels

Characteristics & Capabilities:

Endurance – 30 days

Sustained Speed – 12 kts

Range – 9600 nm

Propulsion – Diesel Electric; LVDC system

Small Craft – Up to 4 survey launch-sized small craft
(crewed and uncrewed)

Azimuthing Drives (L-drive)

UAV support

Radiated noise requirements



OMAO Aircraft and Operations Center



(2) Lockheed WP-3D Orion
"Kermit" and "Miss Piggy"



Gulfstream IV-SP "Gonzo"



(2) Beechcraft King Air 350CER



Aircraft Operations Center
Lakeland, Florida



(4) DeHavilland Twin Otter (DHC-6)

NOAA Aircraft Recapitalization and Sustainment



King Air 350

- Delivered June 2021
- Remote sensing aircraft with dual passive gamma radiation system
- Replaced Jetprop N45RF on NWS Snow Survey mission



Gulfstream G550 High Altitude Jet Procurement

- Replace current Gulfstream G-IVSP N49RF
- Baseline aircraft completed Dec 2019
- Currently being modified for delivery in FY24/25



Aircraft Recap Plan Update:

- Aircraft plan currently being updated and reviewed for clearance
 - Plan will address the requirements for:
 - Second G550
 - Four P3 replacements
 - 3rd King Air – Remote Sensing aircraft
 - 5th Twin Otter



Uncrewed Systems

UxS Operations Center

- Approval of all NOAA UAS operations
- Provide policy, guidance, and FAA coordination to NOAA UAS Users
- Consolidates UAS and Uncrewed Marine System (UMS) operations
- Manage and administer UxS programs within NOAA
- Streamlines operational coordination



Partnership and Collaborations

- Navy VX-30 UAS Pilot and Liaison
- Naval Oceanography Mine Warfare Center Training Officer

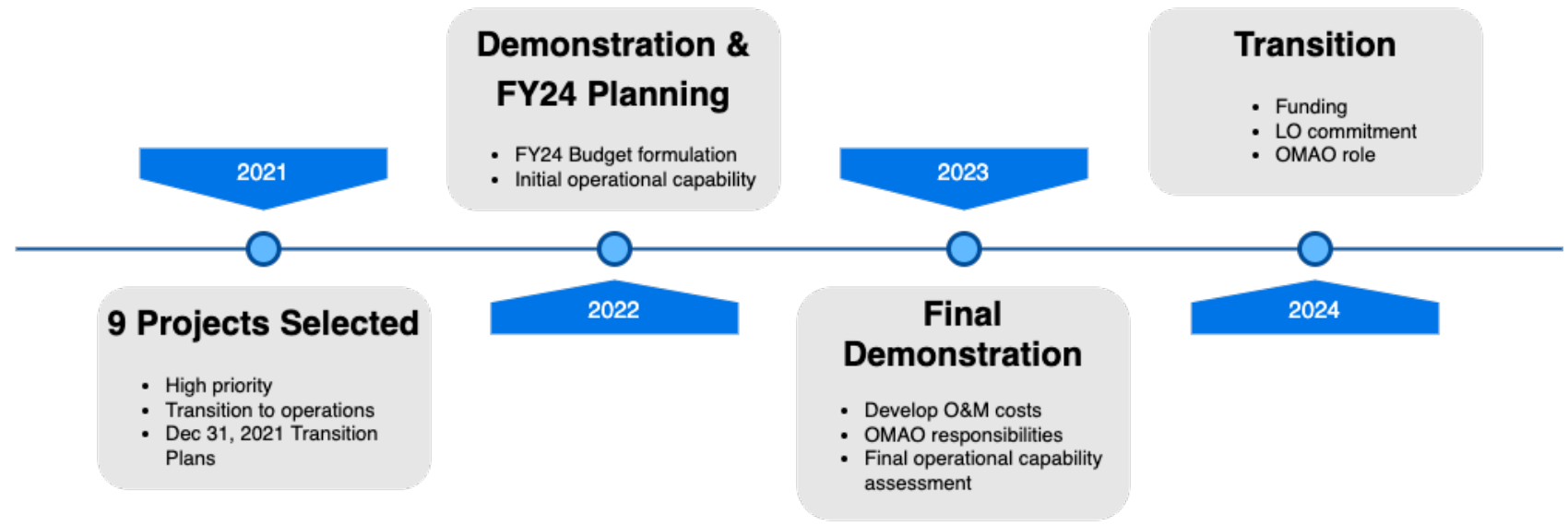


UxS Executive Oversight Board

- Provide oversight of all UxS activities
- Develop and coordinate policy



FY24 Project Transition to Operations



FY21-24 UxSOC High Priority Projects



Project (Geographic Area)	Partner	Desired Final Operating Capability
High-Altitude AirCore Retrieval System for Atmospheric Greenhouse Gas Profiling (CO)	OAR	UAS stratospheric observations by OAR
Advancing UAS-based topo-bathymetric mapping operations along river corridors to inform management of endangered Pacific salmon (CA, OR, WA)	NMFS	UAS river mapping by West Coast NMFS Science Centers
Advancing remote marine mammal stock assessment with passive acoustic gliders (HI)	NMFS	Marine mammal surveys with gliders in HI
REFOCUS - Reimagining Ecosystem and Fisheries Observations by Combining two UxS fleets. (CA)	NMFS	Glider operations by UxSOC/NMFS
Uncrewed Surveys of Pinnipeds in the Aleutian Islands (USPAI) Project (AK)	NMFS	UAS operations by UxSOC
Transition of the Oculus glider into operations for Arctic ecosystem research (AK)	OAR	Glider operations by UxSOC
Use of uncrewed surface vehicles (USVs) in tandem with NOAA vessels to increase survey efficiency (East Coast, Great Lakes and AK)	NOS NMFS	USV Operations from NOAA Ships by UxSOC and Marine Operations
Uncrewed Underwater Vehicle (UUV) for Scallop Survey in Wind Farms Areas (New England)	NMFS	Routine scallop resource surveys
Transitioning the Tropical Cyclone Air-Deployed small UAS to Operations (FL)	OAR	OAR/AOC Operated from WP-3Ds





Use of Uncrewed Surface Vehicles (USVs) in Tandem with NOAA Vessels to Increase Survey Efficiency

Objective: operationalize the use of diesel-powered USVs working in tandem with NOAA ships as ‘force multipliers’ to reduce the cost of sonar measurements for fisheries surveys and hydrographic mapping.

Justification:

- USVs have recently progressed to a point that they can contribute to core OCS and NMFS data products (nautical charts and fisheries stock assessments)
- A single USV working in tandem with a NOAA ship has the potential to reduce ship time requirements for acoustic-trawl and ocean mapping surveys by ~1/3

Planned Activities:

Year 1 (FY 2021)

Specification and purchase of a suitable USV (iXblue DriX identified, procurement completed)

Year 2 (FY 2022)

USV acceptance testing and training
Integration on NOAA Ship Thomas Jefferson Operational hydrographic data collection

Year 3 (FY 2023)

Integration aboard NOAA ship Oscar Dyson
Over the horizon testing
USV testing during Alaska pollock survey

Long-term: Transfer USV operations to OMAO and UxS center.





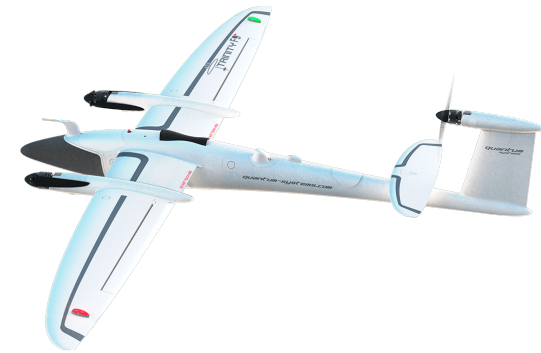
Advancing UAS-based Topo-bathymetric Mapping Operations Along River Corridors to Inform Management of Endangered Salmon

Topo-bathymetric Mapping:

Evaluate topo-bathymetric mapping potential of Trinity F90+ fixed-wing VTOL and payloads.

Compare UAS-based mapping products with those obtained from traditional field surveys (RTK GPS).

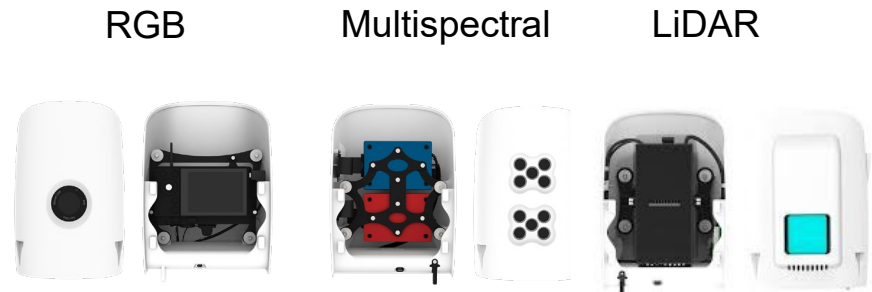
Develop semi-automated salmon habitat mapping workflows.



Trinity F90+ UAS platform and integrated true color, multispectral and LiDAR sensors

PI: Lee Harrison, Southwest Fisheries Science Center, NMFS, NOAA, Santa Cruz, CA

Collaborators: NOAA, NOS, National Geodetic Survey, Remote Sensing Division, Silver Springs, MD; NOAA, NMFS, Northwest Fisheries Science Center, Seattle, WA; United States Geological Survey, Integrated Modeling and Prediction Division, Golden, CO; United States Geological Survey, Oregon Water Science Center, Portland, OR; Oceans Unmanned, Santa Barbara, CA





Value to NOAA and the Nation

NOAA Ships and Aircraft are National Assets:

- Highly mobile and responsive to national emergencies and search and rescue
- Collect data that support the protection of life, property, and the economic health of the nation
- **Platforms collect data essential to national products and services across all NOAA programs**

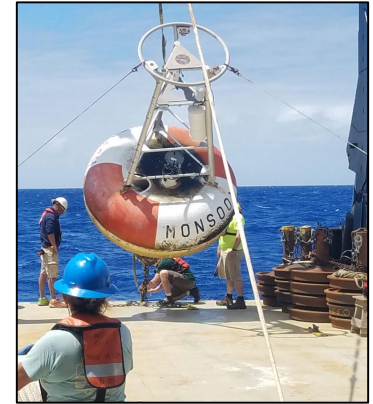
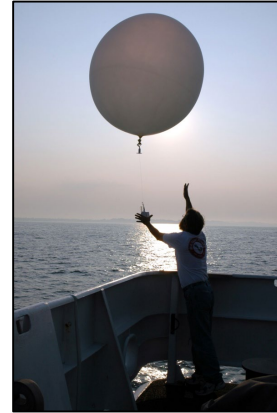




Value to NOAA and the Nation

OAR: Oceanographic and Atmospheric Research

- Tropical Atmosphere Ocean (TAO) Array: 60 Buoys
- Deep-Ocean Assessment and Reporting of Tsunami (DART) System: 38 Buoys
- Ocean Exploration
- Hydrothermal Vent Studies
- Air Quality Studies



NWS: Research and Forecasting

- Hurricane Intensity
- Hurricane Track and Landfall Predictions
- Winter Storm Intensity and Tracks
- Atmospheric Pollutant Studies
- Cloud Physics





Value to NOAA and the Nation

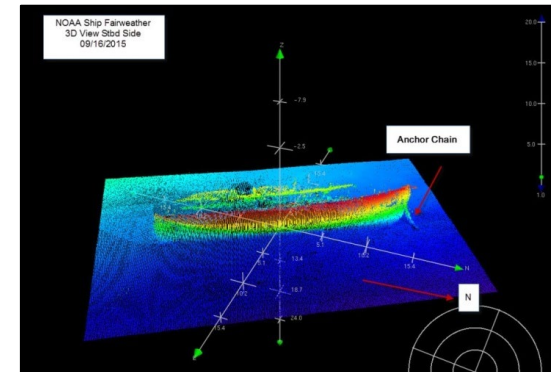
NMFS: Fisheries Surveys and Research

- Fisheries Stock Assessments
- Marine Mammal Surveys
- Biological Sampling
- Ecosystems Research



NOS: Marine and Aerial Charting

- Nautical Chart Data
- Aerial Mapping and Damage Assessment
- Shoreline (LIDAR) Mapping
- Storm Damage Assessments
- Coastal Erosion
- Port and Harbor Updates





QUESTIONS?

