



Coast Guard and Potential Unmanned Systems Applicability



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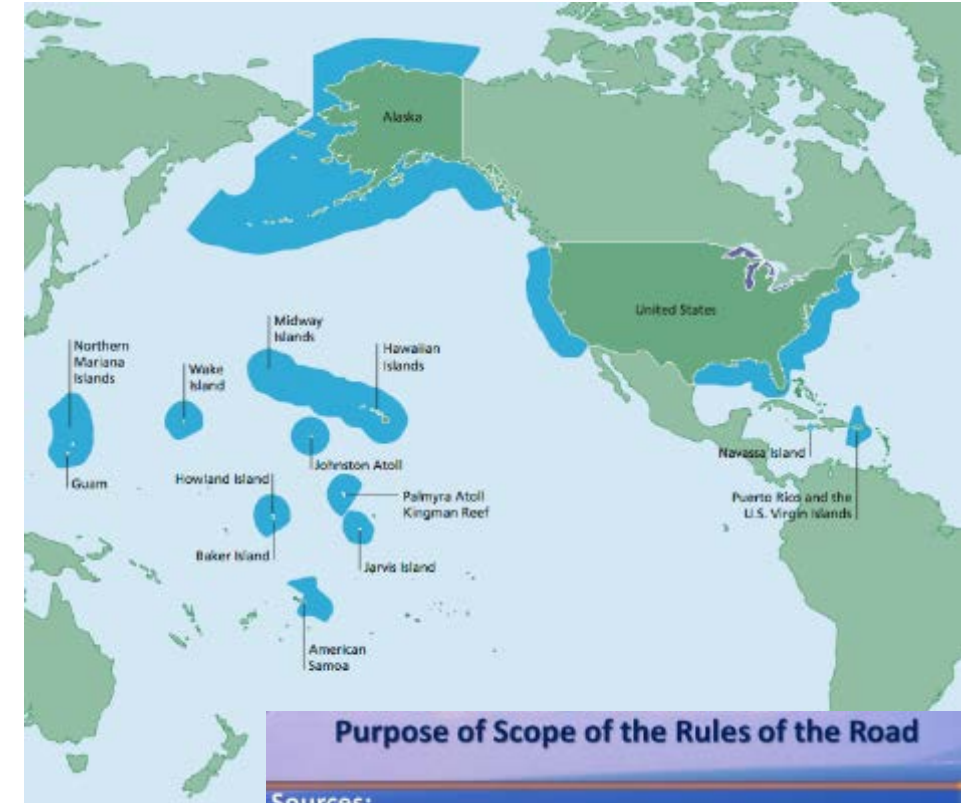


Coast Guard and Potential Unmanned Systems Applicability



While a Military Branch, the CG's missions are very unique and distinct from that of DoD.

- The CG operates in regulated airspace and sea (out to the Exclusive Economic Zone (200nm) and beyond on the High Seas).
 - The FAA & ICAO regulate the airspaces used most heavily by the CG
 - The International Maritime Organization (IMO) developed COLREGS (navigation rules for mariners) that the CG must typically abide through nearly all missions.
- The CG's end game requires human interface/action in nearly all of the 11 Statutory Missions.
- The CG is resource constrained. Unmanned systems must provide demonstrable savings and/or overwhelming capability leaps.
- We see areas where unmanned systems are applicable and we are pursuing several but we appreciate assistance in shaping our efforts across the mission, technical, legal, legislative, and financial landscapes.



Purpose of Scope of the Rules of the Road

Sources:

1972 COLREGS (International Rules)
Regulations for the Prevention of Collisions at Sea
Amended in 1983, 1989, 1991 by the IMO

1980 Navigation Rules Act (Inland Rules)
Applies exclusively to US inland waters

NOTE: Navigation Rules have the force of law.



1. PORTS & WATERWAY SECURITY

► **Ports & Waterway Security** – Entails the protection of the U.S. Maritime Domain and the U.S. Marine Transportation System and those who live, work or recreate near them; the prevention/disruption of terrorist attacks, sabotage, espionage, or subversive acts, and response to and recovery from those that do occur.

- Enforcement of Security Zones (fixed, moving)
- Protection of Maritime Critical Infrastructure and Key Resources
- Support of National Special Security Events
- Provides waterside security escort for military vessels
- Involves the use of Boats, Cutters, Aviation, & people to carry out this mission



► **Potential applicability of unmanned systems:**

- Counter Unmanned Air Systems (C-UAS)
- Persistent Presence/Surveillance
- Detection



2. DRUG INTERDICTION

► **Drug Interdiction** – Deter & disrupt illegal drugs, dismantle drug trafficking organizations, prevent transnational threats from reaching the U.S., & ensures regional stability to provide both national security and economic stability.

- We are the nation's first line of defense against drug smugglers seeking to bring illegal substances into the U.S..
- We coordinate closely with other federal agencies/countries within a vast 6 million square-mile region to disrupt and deter the flow of illegal drugs by both air and surface.
- Use Boats, Cutters, and Aircraft to detect, track, and stop targets of interest. A Surface platform is needed for endgame results – retrieval of evidence and detention/apprehension of smugglers.



► **Potential applicability of unmanned systems:**

- ID targets of interest
- Semi-submersible tracking
- Persistent surveillance
- Disabling capability – non-lethal
- Lidar to make 3-D images of target, map interior/exterior of ships.

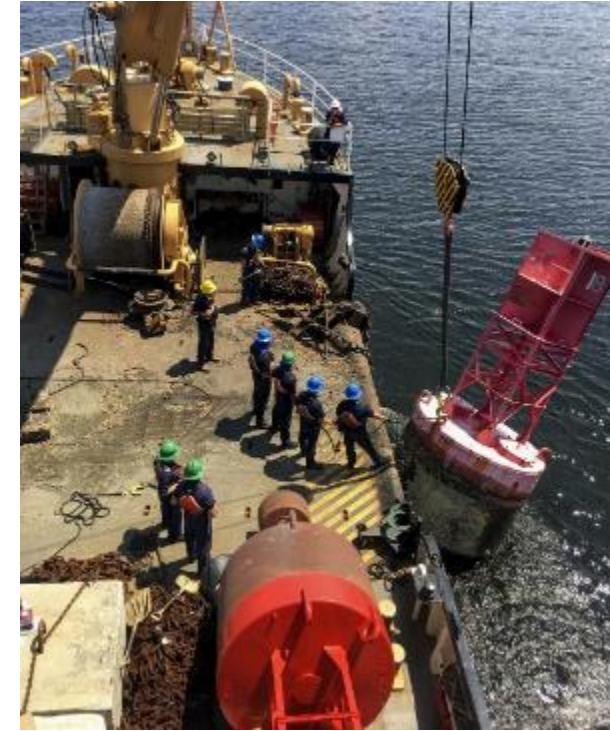




3. AIDS TO NAVIGATION

► **Aids to Navigation** – Ensures safe, secure, efficient, & environmentally sound waterways system. Much like drivers need stoplights, street signs, and universally accepted driving rules, mariners also need equivalent nautical ‘rules of the road.’ The CG is responsible for ensuring this network of signs, symbols, buoys, markers, and regulations is up to date and functioning properly.

- Care for and maintain maritime aids to navigation.
 - Validate aids are on station and or working properly
 - Repair/Replace aids
- Virtual AToN is in use in some locations
- Involves use of Cutters, Boats, and Aircraft



► **Potential applicability of unmanned systems:**

- AToN survey
- Annual-required inspections (hull inspections, buoy chafe measurements)
- Post storm survey
- Search & locate AToN



4. SEARCH and RESCUE

- **Delivery of rescue equipment**
- **Recovery of mobile/incapacitated individuals**
- **Involves multi-mission stations, cutters, aircraft.**



- ## ► Potential applicability of unmanned systems:
- Persistent search capability
 - Drone Swarm to expand search area
 - Delivery of search and rescue equipment

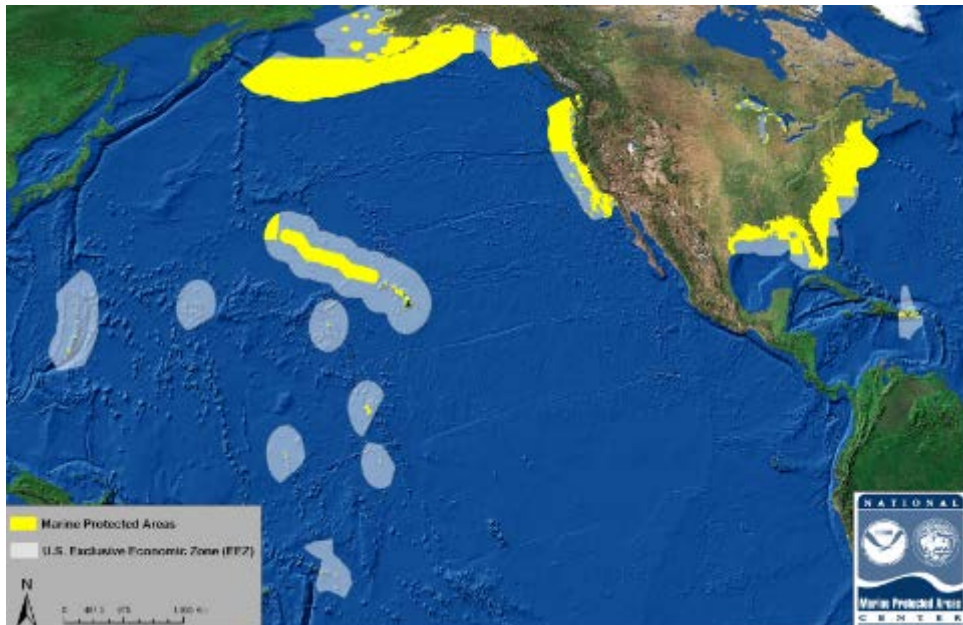


5. LIVING MARINE RESOURCES



► **Living Marine Resources** - Provide effective & professional enforcement to advance national goals for the conservation, management, and recovery of living marine resources, marine protected species, & national marine sanctuaries/monuments.

- The CG is the lead federal agency for at-sea enforcement of U.S. fisheries laws
- Protecting the U.S. Exclusive Economic Zone (EEZ) from foreign encroachment (the U.S. EEZ is the largest in the world, comprising 3.4 million square miles of ocean and more than 90,000 miles of coastline).
- Enforcing domestic fisheries laws
- Maintaining international fisheries agreements



► **Potential applicability of unmanned systems:**

- Persistent surveillance of Marine Protected Areas
- Persistent tracking of fish populations
- Fishing gear inspection while deployed
- Fishing vessel speed tracking capability
- Right Whale tracking

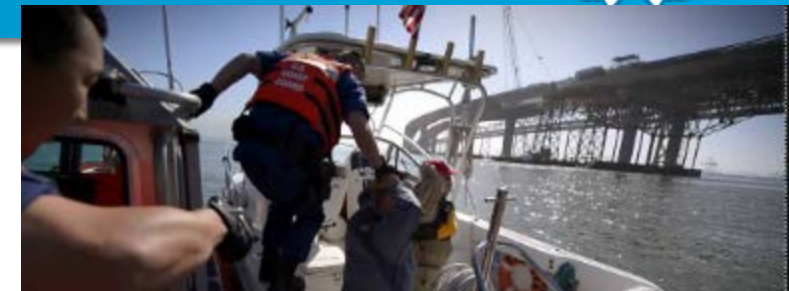


6. MARINE SAFETY



► **Marine Safety** - Prevent personnel casualties, accidents, & property losses in the maritime environment by establishing standards; conducting vessel, container, & facility inspections; partnering w/state & boating safety organizations to reduce recreational boating accidents & deaths; investigating marine casualties; & licensing U.S. mariners.

- Promoting safe boating practices
- Investigates maritime accidents, merchant vessels, offshore drilling units, and marine facilities
- Licensing mariners & documenting U.S. flagged vessels
- Conducting boardings of vessels to ensure proper safety equipment and documentation



► **Potential applicability of unmanned systems:**

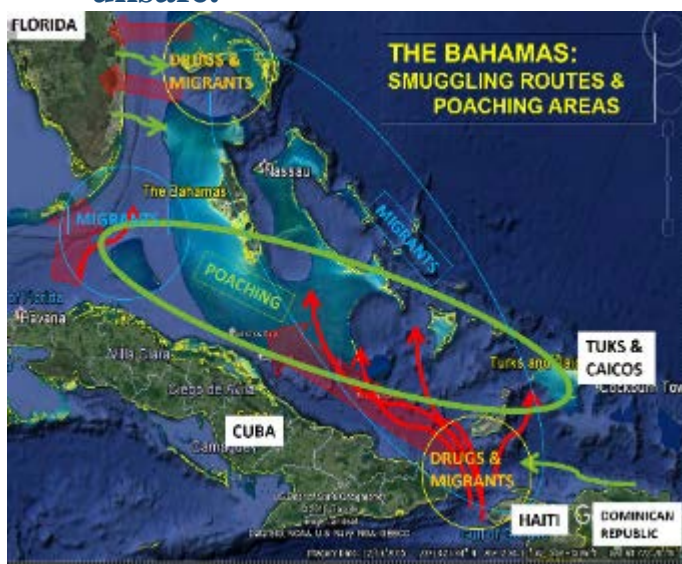
- Vessel inspections
 - Tank bottoms
 - Confine spaces
 - Shell plating thickness
 - Hazardous conditions
 - Stack gas emissions
- Visual pre-screen prior boarding





7. MIGRANT INTERDICTION

- ▶ **Migrant Interdiction** - Deter undocumented migrants & transnational smugglers from using maritime routes to enter the U.S., & to detect & interdict undocumented migrants & smugglers away from the U.S. border, denying entry via maritime routes to the U.S., its territories, & possessions.
 - Conducts patrols via boat, cutter, or air and coordinates with federal agencies and foreign countries to detain undocumented migrants at sea.
 - Maintains humanitarian responsibility to prevent the loss of life at sea since the majority of migrant vessels are dangerously overloaded, unseaworthy, or otherwise unsafe.



- ▶ **Potential applicability of unmanned systems:**
 - Persistent Surveillance/Presence
 - Detection
 - Delivery of supplies (food, water, safety equipment)

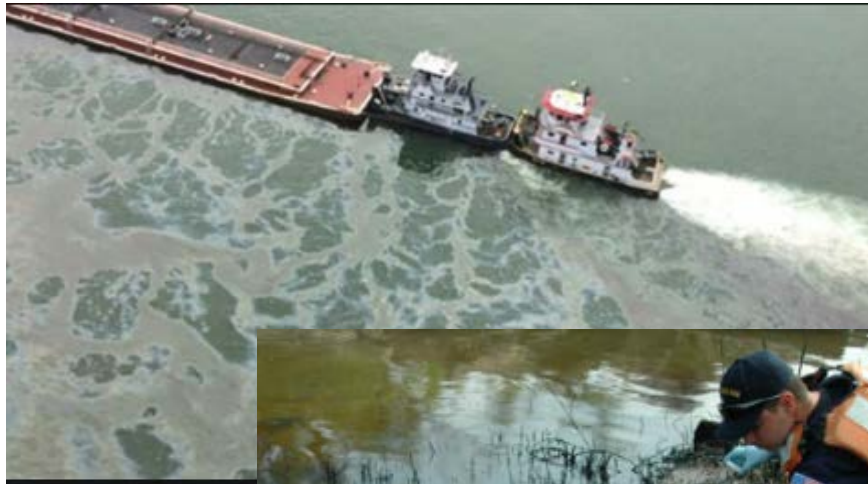


8. MARINE ENVIRONMENTAL PROTECTION



► **Marine Environmental Protection** - Reduce the risk of harm to the maritime environment by preventing, mitigating the effects of, & responding to oil spills & hazardous substance discharges; the introduction of invasive species; & unauthorized dumping.

- Use Boats, Aviation, and personnel in support of this mission.



► **Potential applicability of unmanned systems:**

- Boom deployment
- Mapping oil/hazardous substance above and below the surface
- Sample collection
- Dispersant delivery



9. ICE OPERATIONS

- ▶ **Ice Operations** - Facilitate domestic commerce through ice covered waters & prevent/respond to ice that causes flooding; support U.S. national security, economic, and scientific interests in the polar regions; & safeguard commerce by reducing the risk of collision between ships & icebergs.

- Ice Breakers and Aviation are used in support of this mission



- ▶ **Potential applicability of unmanned systems:**

- Ice survey
- Persistent presence of polar regions
- Detection and tracking of icebergs

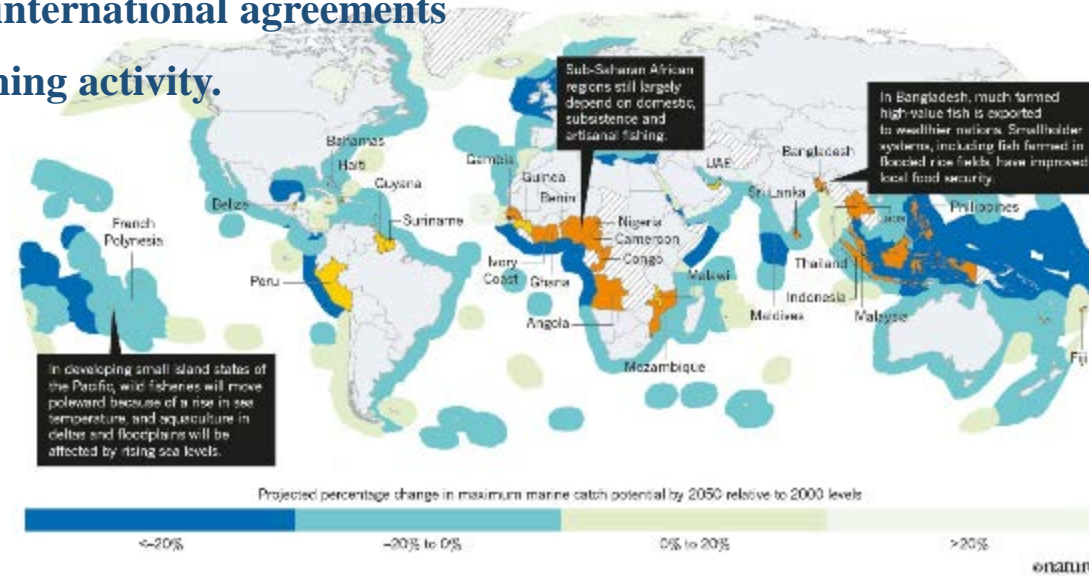




10. OTHER LAW ENFORCEMENT



- **Other Law Enforcement** - Enforce federal laws; deter, detect, & interdict any foreign fishing vessel making incursions into the U.S. EEZ; ensure compliance with international agreements for the management of LMR; & deter illegal, unreported, & unregulated fishing activity.



- **Potential applicability of unmanned systems:**

- Persistent surveillance/detection
- Persistent presence/deterrence
- Fishing gear inspection while deployed
- Fishing vessel speed tracking capability



11. DEFENSE READINESS



- ▶ **Defense Readiness** - Support national military strategy & DOD operations by ensuring that Coast Guard assets are capable & equipped to deploy/conduct joint operations in support of the most critical needs of combatant commanders.



- ▶ **Potential applicability of unmanned systems:**
 - Counter UAS
 - Persistent surveillance
 - Directional EMP