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Coordinated effort to improve data compatibility from multiple fishery-independent surveys of spiny lobster, *Panulirus argus*, to better inform fisheries management in the U.S. Caribbean

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Workshop Rationale

- Multiple agencies currently conduct fishery independent (FI) surveys of spiny lobster
- Surveys have developed independently, resulting in differences in:
  - survey design
  - target habitats and depths
  - sampling methods
  - spatial coverage
  - data management
- The workshop created a forum to move beyond individual program needs and begin developing a shared regional framework for lobster monitoring

Workshop Goals

The workshop focused on four major objectives:

- Review existing U.S. Caribbean fishery-independent survey programs and their ability to meet lobster management needs.
- Determine whether programs can move toward a unified or highly complementary survey design.
- Identify analyses, documentation, and program roles needed to support a coordinated survey framework.
- Clarify responsibilities for data processing, management, archiving, sharing, and dissemination.

Participating Organizations

- NOAA Southeast Fisheries Science Center (SEFSC)
- National Coral Reef Monitoring Program (NCRMP)
- Southeast Area Monitoring and Assessment Program - Caribbean (SEAMAP-C)
- National Park Service (NPS)
- Florida Fish and Wildlife Conservation Commission (FWC)
- Puerto Rico Department of Natural and Environmental Resources (DRNA)
- USVI Division of Fish & Wildlife (DPNR)
- University of Miami (CIMAS/RSMAS)
- Caribbean Fishery Management Council (CFMC)
- Stock Assessment Scientists
- Survey Design Experts

Point of Agreement: Collaboration

- Participants agreed that no single program can fully address all regional lobster data needs alone.
- A coordinated approach can:
    - Improve spatial and habitat coverage
    - Reduce duplication of effort
    - Increase sample sizes
    - Improve assessment utility
    - Share technical and logistical responsibilities across agencies
- The workshop established broad support for a collaborative regional approach to Caribbean spiny lobster survey development.

Point of Agreement: Complementary Survey Design

- Participants supported moving toward a highly complementary survey framework:
- The agreed upon framework consists of:
  - Coordinated survey planning across programs
  - Standardized methods where feasible (e.g., 15m RVC cylinder, 50m2 grids)
  - Complementary habitat and depth coverage
  - Shared sampling frames and survey design support
  - Integration of diver and trap-based data streams

Recommended Approach: Developing a multi-gear survey

Program	Region	Proposed Focus
NCRMP	PR & USVI	Low-relief reef and pavement habitats; generally diver-accessible depths, <30 m
NPS	USVI	Park waters around St. John / St. Thomas; diver-accessible lobster habitats, <30 m
SEAMAP-C / DFW	USVI	Territorial survey areas; proposed annual lobster trap survey in both districts; deeper habitat emphasis where appropriate
SEAMAP-C / DRNA	PR	High-relief reef habitats; proposed diver surveys <30 m
Trap Survey	PR	Deeper lobster habitat; proposed trap sampling >30 m

Data and Infrastructure Recommendations

- Participants agreed that collaboration must be supported by stronger data infrastructure.
- Recommendations include:
  - Shared data fields and metadata
  - Coordinated QA/QC
  - Centralized or linked databases
  - Integrate data annually
  - Clear data-sharing and archival responsibilities

Coordination and Leadership

- The workshop identified the need for continued regional coordination to maintain momentum.
- Recommended coordination roles include:
  - SEFSC/CIMAS support for coordination and survey design
  - Program-level leadership from NCRMP, NPS, SEAMAP-C, and territorial partners
    - Shared responsibility for implementation, data management, and reporting
    - Continued communication among assessment scientists, survey leads, and managers

Outcomes and Next Steps

- The workshop produced several important outcomes.
  - First, it successfully convened the key agencies, survey programs, and technical experts needed to address this issue.
  - Second, it created a shared understanding of existing lobster survey efforts, including their strengths, limitations, and potential areas of overlap.
  - Third, it established broad agreement around the need for a coordinated, multi-program, multi-gear approach.
  - Fourth, it identified priorities for standardization, calibration, data integration, and future survey design work.
- The next steps are to refine the regional survey design framework, develop calibration and sampling-frame analyses, document program roles and responsibilities, and continue communication among the participating programs.

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Thank you!