



Artificial Reefs in the Florida Keys: Opportunities to Support Fisheries Management Objectives



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What is an artificial reef?

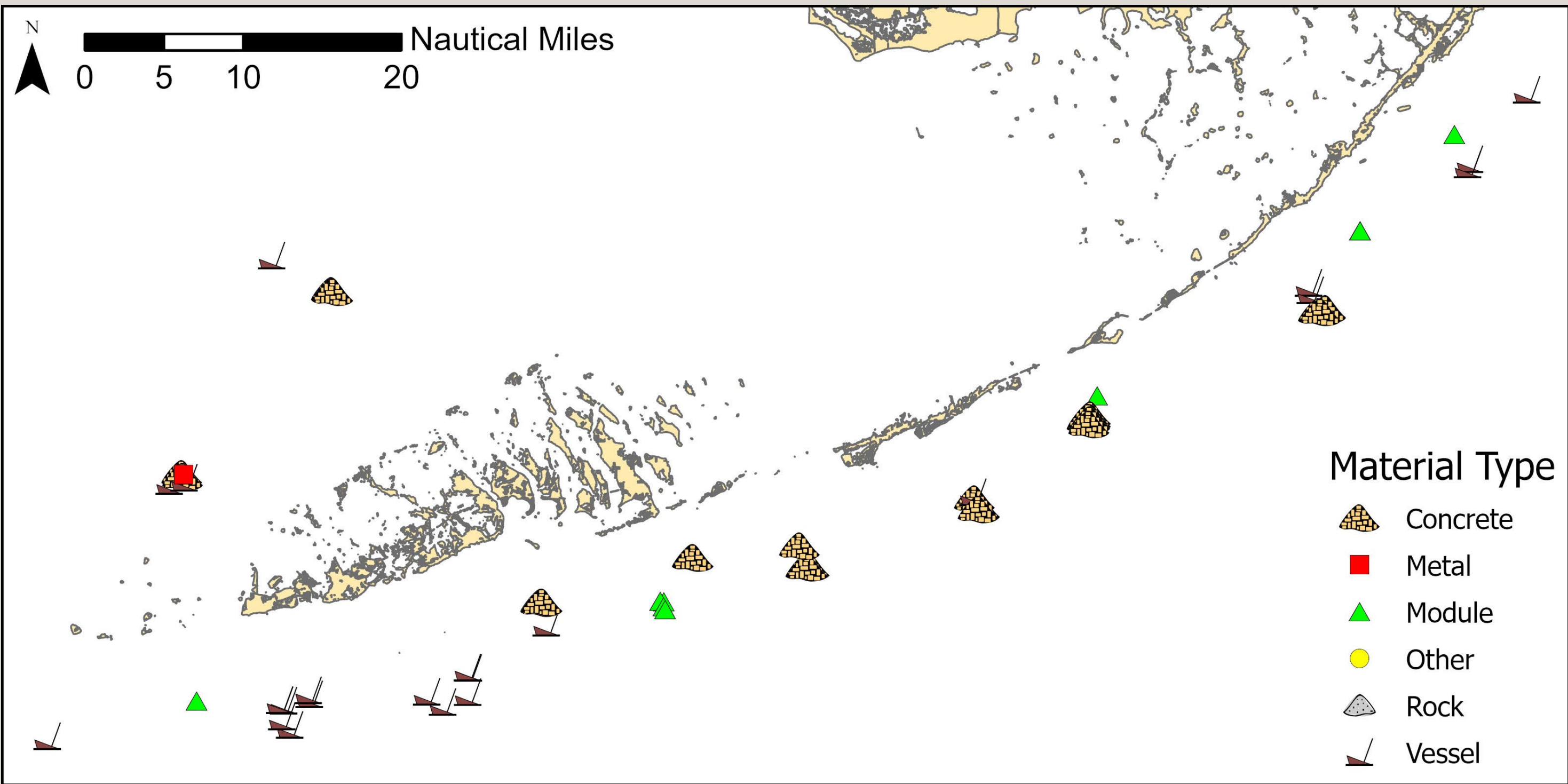
Structures of natural or human origin intentionally placed on the seafloor to achieve a variety of goals:

- create new marine habitat
- enhance recreational fishing and diving opportunities



Artificial Reefs in the Keys

The 62 existing artificial reefs in the Florida Keys were mostly constructed in the 1980s, utilizing materials from bridges and vessels.



Recent legislative appropriation (\$15M) to reestablish the Monroe County Artificial Reef Program and to permit, construct, and monitor habitat support structures (artificial reefs).

Goals

Leverage the unique ecological and socio-economic attributes of the Florida Keys with scientific evidence to:

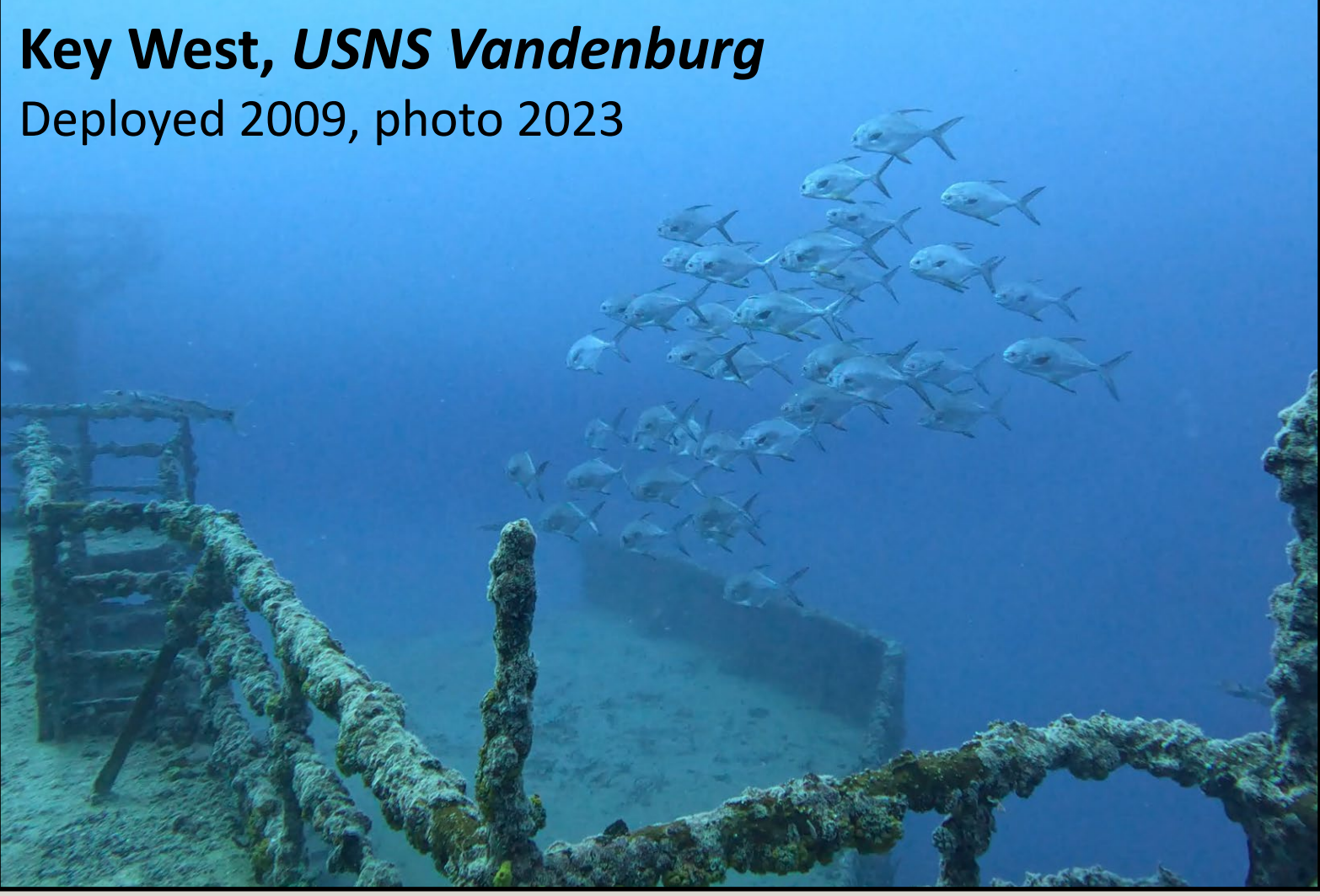
- Obtain a mechanistic and predictive understanding of how artificial reefs function ecologically and physically across spatiotemporal scales to support fisheries management objectives
- Minimize unintended consequences
- Benefit the stakeholders and resources within the Keys

Discussion

- How can artificial reefs be used to improve fisheries?
- What habitat bottlenecks exist in the Keys?
- Which areas serve as connectivity hotspots?
- What other ways might artificial structures alleviate pressure on natural reefs?

Case Studies

High-relief artificial reef sites are known aggregation sites for permit (*T. falcatus*) and barracuda (*S. barracuda*)¹.



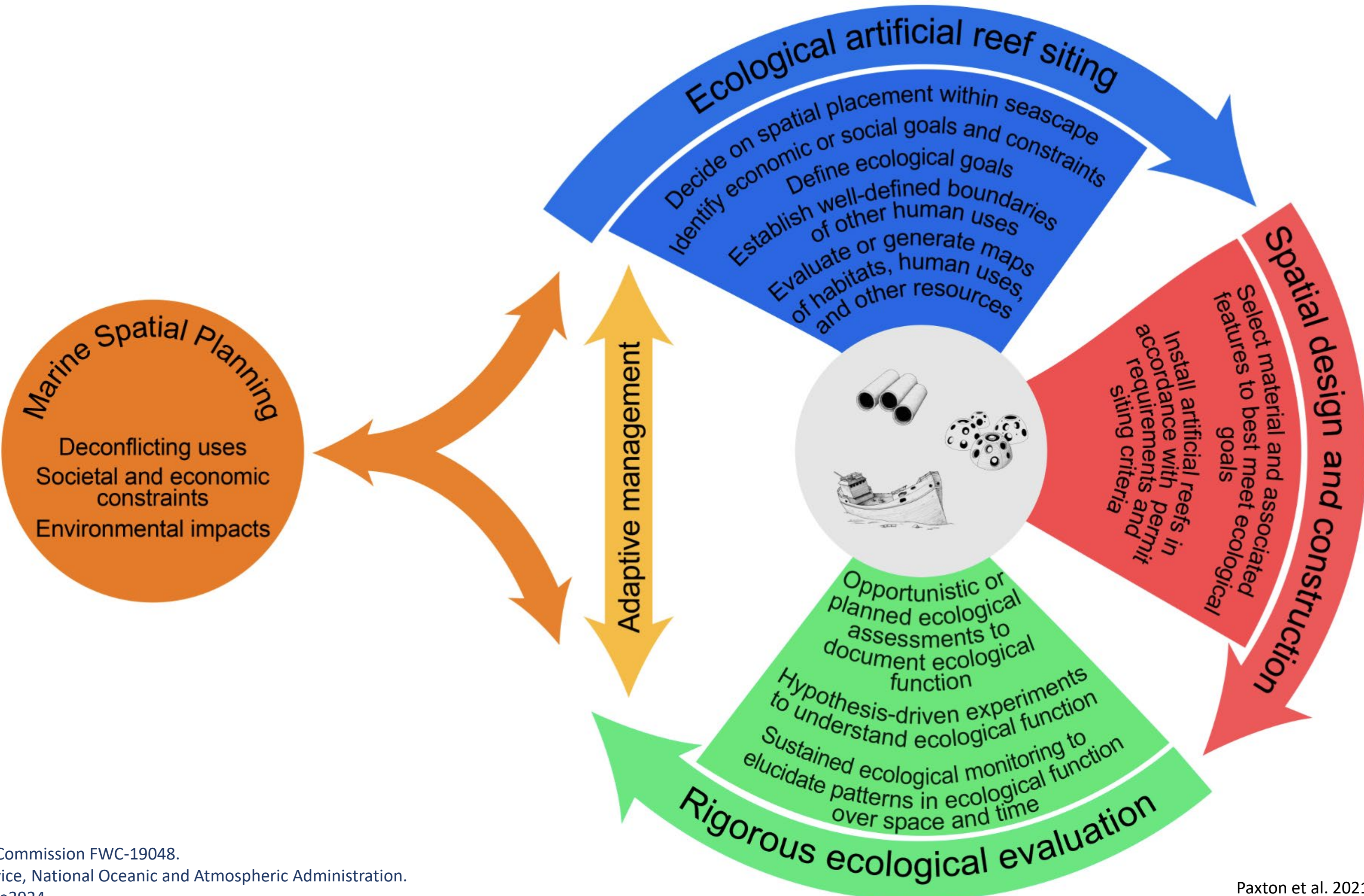
Low-profile artificial reef modules are documented habitats utilized by red grouper (*E. morio*). **Below right**



The *USNS Vandenberg* has been estimated to generate a 20-year return of at least \$7.7 million². **Above left**

Spatial Planning and Fisheries Management

Strategic planning of artificial reefs requires incorporation of oceanographic, ecological, and social considerations. Siting artificial reefs in relation to currents, biological pathways, and existing closed areas could impact a variety of fish species and life history stages³. When sited properly, these impacts have the potential to shift user pressure, impact fisheries, and generate socio-economic benefits. Acknowledging recent advances towards incorporating habitat and ecosystem information into fisheries management decisions^{4,5}, we propose including artificial reefs as part of the adaptive fisheries management toolbox.



References

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⁴Kenworthy, Matthew, Burgess, E., Renchen, J., Espittia, J., McCawley, J. 2024. Incorporation of ecosystem information into fisheries management decisions. 9th World Fisheries Congress. Seattle, USA.
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