A New Class of Coastal Research Vessels for UNOLS

New Class of Vessel Needed

- Regional Consortia
  - Needed for Education at Undergraduate Training
    - 20+ Students for Day Trips
  - Needed for Graduate Education
    - 5 +/- Students for 3 – 5 Day Cruises
- Ability to work in waters from 3 – 6 meters depth out to the edge of continental shelf.
- Consortium Use requires ability to restage at the state of consortium level in < day.
- Low Operation Cost
  - Small crew
  - Good Mileage
  - Low Maintenance
- ***New Construction ~ $3.5 M***
- ***Operation < $3,000/day (180 days = $600K/yr)***

Example Potential Solution = *R/V Shearwater* Class Catamaran from All American Marine

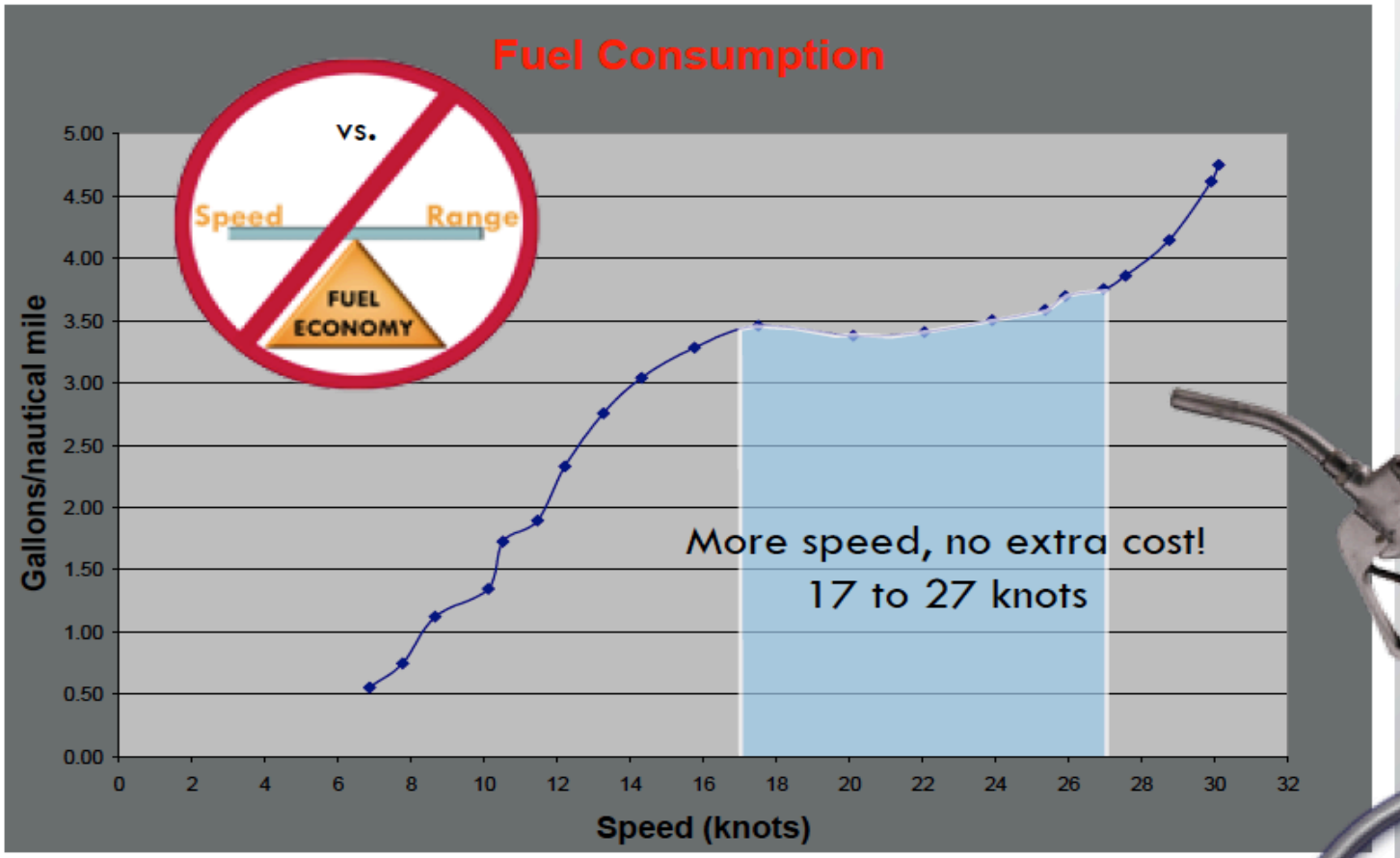
R/V SHEARWATER	
Overall Length	18.5 m ~ 62 ft
Beam	7.6 m ~ 25 ft
Draft	0.9 meters ~ 3 ft
Gross Tons	39 tons
Cruising Speed	20 knots
Maximum Speed	24 knots
Crew	2
Berth	10 (3 Crew + 2 Faculty + 5 Students)
Passengers	22 (2-4 Faculty + 18-20 Students)
Deck Cargo	1,300 kg
Fuel	6,750 liters ~ 1800 gallons
Fuel Consumption	180 liters/hour ~ 47.5 gallons/hour
Range	400 nm
Main Deck Area	37 m^2 ~ 400 ft^2
O2 Deck Level	60 m^2 ~ 645 ft^2
Wet Laboratory	8 m^2 ~ 86 ft^2
Dry Laboratory	6.5 m^2 ~ 70 ft^2

Fuel Costs 50% of Comparable Monohull

VESSEL	83' Teknicraft Catamaran	90' Composite Monohull
PASSENGERS	150	150
ENGINE RPM	1800	1800
ENGINE POWER	49.5%	80%
SPEED	22 knots	22 knots
FUEL CONSUMPTION	75.1 gallons/hour	150 gallons/hour
HOURS AT 22 KNOTS	1600 hours/year	1600 hours/year
FUEL COST	$3/gallon	$3/gallon
ANNUAL FUEL CONSUMPTION	120,160 gallons	240,000 gallons
ANNUAL FUEL COST	$360,480	$720,000
ANNUAL FUEL SAVINGS	$359,520	$0
MONTHLY FUEL SAVINGS	$29,960	$0

The Teknicraft hydrofoil system provides a lifting effect for the hull and displaces nearly one-third of the vessel's weight, while at speed. The lifting effect reduces drag and resistance, which in turn requires less engine power and lower fuel consumption to maintain a given speed. The *Aialik Voyager* has demonstrated extreme fuel economy and burns approximately the same gallons per nautical mile from 17 knots up to 27 knots.

Performance Comparison




100 mile
circle
5 hours at
cruise
Speed =
20kts
Roanoke Island
Pamlico Sound
Harkers Island
Beaufort, NC
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2 Scientific Labs
Wet Lab


2 Scientific Labs
Dry Lab

COM-7E	0.257" (6.5mm)	2000M	2,203 lbs (1001 kg)	45 m/min	7.5HP

Can even be trailed?

Discussion