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ROLE OF SIMULATION TECHNOLOGY IN MARITIME TRAINING

C/E.Balan Muthuramalingam, Principal-RLINS

The maritime industry has always been founded on discipline, precision, safety, and professional competence. As modern ships become increasingly advanced and operational demands continue to rise, maritime education must also adapt to meet these changing requirements. In this evolving environment, simulation technology has become one of the most important and transformative tools in maritime training.

As the Principal of a maritime institution, I strongly believe that simulation-based training is no longer just an additional learning aid — it has become an essential part of modern maritime education. It effectively connects theoretical classroom learning with real-time shipboard operations, enabling cadets and maritime professionals to build confidence, technical competence, and critical decision-making skills in a safe and controlled environment.

Modern maritime simulators are designed to recreate realistic on-board situations that closely mirror actual vessel operations. Whether it is bridge navigation, engine room operations, cargo handling, communication procedures, or emergency response, simulation technology allows trainees to gain practical exposure without the dangers associated with live operational conditions. This hands-on experience greatly improves situational awareness, teamwork, leadership abilities, and crisis management skills.

One of the major advantages of simulator training is its effectiveness in preparing seafarers for emergencies. Critical situations such as collision avoidance, equipment failure, engine breakdowns, on-board fires, rough weather conditions, and navigation through congested waters can be practiced repeatedly until trainees develop confidence and operational

clarity. Such practical exposure is extremely valuable, especially for cadets who may have limited opportunities to experience these situations during on-board training.

Simulation technology also plays a significant role in competency-based learning, as required by international maritime regulations and STCW standards. It enables instructors to evaluate performance objectively, identify areas requiring improvement, and provide focused guidance to trainees. As a result, the entire training process becomes more systematic, measurable, and aligned with industry expectations.

Apart from technical expertise, simulation training also contributes to the development of essential soft skills and human factors. Successful maritime operations rely heavily on communication, coordination, leadership, and effective resource management. Simulator exercises encourage collaborative learning and help trainees understand the importance of teamwork, discipline, and professional

responsibility during critical operations.

In today's rapidly digitalizing maritime industry, shipping companies expect officers and crew members to be technologically skilled from the very beginning of their careers. Therefore, institutions equipped with advanced simulation facilities are better prepared to produce industry-ready professionals who can efficiently adapt to modern shipboard technologies and evolving operational practices.

At our institution, we consider simulation technology not merely as an academic requirement, but as a valuable investment in maritime safety, operational excellence, and professional growth. By integrating advanced simulator training into our curriculum, we aim to develop competent,

confident, and globally employable seafarers capable of contributing effectively to the maritime sector.

In conclusion, simulation technology has revolutionized maritime training by making learning more practical, immersive, and efficient. It strengthens technical competence, enhances safety awareness, and prepares future seafarers to successfully face the challenges of the global maritime industry. As maritime education continues to evolve with technological advancements, simulation will undoubtedly remain at the centre of this transformation.

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MARINE MAMMALS

Cadet. Jayanti Dubey, GP Rating

Marine mammals are found in oceans and seas all around the world. They are a diverse group of animals that have developed special physical and behavioral adaptations to survive in marine environments. These adaptations help them live in extreme conditions such as very cold temperatures, deep waters, high pressure, and darkness. Most marine mammals have streamlined bodies, thick layers of fat called blubber for insulation, and strong flippers or tails that help them swim efficiently.

Marine mammals are classified into four major taxonomic groups:

Cetaceans – This group includes whales, dolphins, and porpoises. They are fully aquatic mammals that breathe air through blowholes located on the top of their heads.

Pinnipeds – This group includes seals, sea lions, and walruses. They spend much of their time in the water but also come onto land or ice for resting, breeding, and giving birth.

Sirenians – This group includes manatees and dugongs. They

are gentle, plant-eating marine mammals often called “sea cows.”

Marine fissipeds – This group includes animals such as polar bears and sea otters that are adapted to marine life but still retain many characteristics of land mammals.

Marine mammals play an important role in maintaining the balance of marine ecosystems. However, many species are threatened by pollution, climate change, habitat destruction, hunting, fishing nets, and plastic waste in the oceans. Conservation programs and international laws are helping to protect these animals and their habitats.



Courtesy: <https://www.noaa.gov/>

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PASSION BEYOND SAILING: A JOURNEY IN MARITIME TEACHING

Er. S.Thiagarajan, Senior Faculty - RLINS

Maritime education is often viewed as a field reserved only for experienced seafarers. However, true education goes beyond personal experience at sea. It is built on knowledge, dedication, discipline, and the passion to guide future professionals toward success.

In many maritime institutions, educators without sailing backgrounds face silent challenges. They enter classrooms where students naturally expect practical sea stories and onboard experiences. Building trust and confidence in such an environment requires patience, preparation, and continuous learning.

The real strength of a teacher lies not only in experience, but in the ability to transform complex concepts into meaningful understanding. Through sincere effort, modern teaching methods, practical examples, and constant self-improvement, educators

can successfully connect classroom learning with the realities of the maritime world.

Maritime teaching today demands much more than theoretical instruction. It requires understanding technological advancements, international regulations, discipline, leadership, and professional ethics. Teachers who continuously update their knowledge and adapt themselves to industry needs become an important support system for cadets preparing for life at sea.

Challenges are part of every profession, but they often become the foundation for growth. Difficulties faced in gaining acceptance, adapting to maritime culture, and meeting student expectations gradually shape educators into stronger and more effective mentors. These experiences teach resilience, confidence, and the importance of lifelong learning.

The maritime industry needs educators who can inspire students, motivate them during difficult times, and prepare them to face global challenges with professionalism and confidence. Whether from sea experience or academic excellence, every teacher contributes to shaping responsible maritime professionals.

Passion for teaching is itself a powerful journey. Just as ships navigate through rough seas to reach their destination, educators too overcome challenges through determination and commitment. In the end, the true measure of a teacher is not where they come from, but how many lives they inspire and transform through education.

“A great maritime educator does not merely teach navigation of ships, but also helps navigate the future of young minds.”

**SHAPING MINDS.
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THE POWER OF MARITIME EDUCATION

“ A great maritime educator does not merely teach navigation of ships, but also helps navigate the future of young minds. ”

In recent years, the maritime industry has undergone a significant shift toward sustainability and environmental responsibility. Marine vessels are increasingly being electrified, either as a primary or secondary source of power. This move toward electric shipping, driven by the urgent need to reduce carbon emissions and minimize the environmental impact of waterborne transport, represents a transformative milestone for the maritime sector.

Traditionally, marine vessels have relied on internal combustion engines for propulsion. While effective, these systems have significantly contributed to environmental pollution and posed ecological challenges for waterways and marine ecosystems. The shift toward ship electrification offers a cleaner, quieter, and more sustainable alternative for the maritime industry.

Electric ships and boats, powered by advanced battery systems or fuel cells, provide several key advantages:

Environmental Sustainability: Electric vessels produce zero emissions at the point of use, significantly reducing their carbon footprint and minimizing environmental impact on aquatic ecosystems.

Reduced Noise Pollution: Electric propulsion systems operate far more quietly than conventional combustion engines.

Lower Operating Costs: Although the initial investment in electric propulsion technology can be higher, long-term operating costs are generally lower. Electric vessels require less maintenance, have fewer moving parts, and offer greater energy efficiency, resulting in substantial cost savings over time.

Improved Range and Charging Capabilities: Advancements in battery technology have significantly improved the operational range of electric boats

while reducing charging times. These developments address many of the early concerns surrounding electric marine propulsion and make adoption increasingly practical for a wider range of applications.

Simplified Charging Infrastructure: For short-range vessels, tenders,

and inland watercraft, charging requirements are relatively modest. In many cases, standard electrical infrastructure at conventional mooring facilities is sufficient to support slow-rate charging, making electric propulsion both accessible and convenient.

The infographic features a central illustration of a cargo ship with a blue and white checkered deck. Surrounding this are five benefit boxes, each with an icon and text:

- Lower Fuel Consumption:** Reduced generator runtime at sea and in port. (Icon: Fuel gauge and clock)
- Optimized Hybrid Power:** Balances engine and battery loads for greater efficiency. (Icon: Gears and battery)
- Quieter, Cleaner Ports:** Lower noise and localized emissions. (Icon: Ear and leaf)
- Retrofit-Ready Integration:** Upgrade existing vessels without full replacement. (Icon: Ship and arrow)
- Greater Operational Resilience:** Backup power and flexible energy use. (Icon: Battery and shield)

Courtesy: www.sierra-cp.com & www.hanwha.com

Novorossiysk Port Sees Drone Strike on Three Oil Tankers

Cadet. Vignesh Ponraj, ETO

In the Black Sea, drones targeted at least three oil tankers en route to the Caspian Pipeline Consortium (CPC) terminal near the Russian port of Novorossiysk to transport Kazakh oil. According to Reuters, the tankers Delta Harmony, Delta Supreme, and Matilda were hit while waiting to dock.

Two drones struck the Matilda about 48 km from the CPC berths before leaving the area. A fire broke out onboard the vessel but

was quickly extinguished. The crew was unharmed, and the ship remained operational.

The attacks took place in the Black Sea near the Russian coast, not in Kazakh waters, as some early reports suggested.

At the time of the attack, the Delta Harmony was scheduled to load oil from the Tengiz field, while the Matilda was set to load oil from the Karachaganak field. The CPC terminal handles around 80% of Kazakhstan's oil

exports to global markets through the Black Sea. Due to restrictions on terminal operations, Kazakhstan's oil production fell by 35% between January 1 and 12.

Photos from MarineTraffic showed the locations of ships near the CPC terminal during the attacks. Additional images from the Center for Transportation Strategies showed ships near the CPC Marine Terminal in Novorossiysk, the main export point for Kazakh oil.



Courtesy: <https://militaryni.com/>

As part of the admission promotion activities, our institute Principal and PRO visited Mangalore and successfully conducted an offline test and personal interview for prospective students. The event provided students with an opportunity to interact directly with the admission team, learn more about the courses and facilities offered by the institute, and clarify their queries regarding admissions and career opportunities.



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Ocean Pollution: A Growing Threat to Marine Life

Cadet. Balaji Chodi, GME Cadet

Every year, billions of pounds of trash and pollutants enter the ocean, threatening marine ecosystems and human health. Ocean pollution has become one of the most serious environmental issues worldwide. From plastic waste floating on the surface to harmful chemicals sinking beneath the waves, pollution affects every part of the marine environment.

Some debris washes ashore and covers beaches with waste, while other materials sink to the ocean floor or drift into large ocean gyres, where trash accumulates over time. Marine animals often mistake floating debris for food, leading to injury, starvation, or death. In addition to visible waste, pollutants such as oil, chemicals, and fertilizers also damage ocean ecosystems.

One major source of ocean pollution is human activity. Most pollutants originate from coastal regions and even areas far inland. A large percentage of this pollution comes from nonpoint source pollution, which is caused by runoff from many different places rather than a single source. Rainwater

can carry harmful substances from farms, roads, septic tanks, livestock ranches, vehicles, and timber harvest areas into rivers and eventually into the ocean.

Another type of pollution is point source pollution, which comes from a single identifiable source, such as an oil spill or chemical leak. Although these incidents occur less frequently, they can have devastating environmental impacts. Discharge from damaged factories or faulty water treatment systems is also considered point source pollution.

In some cases, pollution is determined not only by the type of material but also by its concentration. Nutrients like nitrogen and phosphorus are necessary for plant growth, but excessive amounts in water can cause rapid algae growth known as an algal bloom. Harmful algal blooms, often called “red tides,” can release toxins that endanger marine life and human health.

Excess nutrients can also create dead zones, or areas with very low

oxygen levels. When large amounts of algae die and decompose, the process consumes oxygen in the water, leaving marine organisms unable to survive. Fish and other mobile species may flee these areas, while less mobile organisms often die.

To address these challenges, scientists and environmental organizations continue to monitor ocean conditions and predict ecological changes. Advanced forecasting systems help identify harmful algal blooms and warn communities about potential risks. These efforts allow local authorities to make informed decisions, such as temporarily closing beaches to protect public health.

Protecting the ocean requires global awareness and responsible action. Reducing plastic waste, improving waste management systems, limiting chemical runoff, and supporting environmental conservation efforts are essential steps toward preserving marine ecosystems for future generations.



The Value of Marine Protected Areas

Cadet. Bachittar Singh, GP Rating

Marine ecosystems around the world are under increasing threat from pollution, habitat destruction, and overfishing. To help protect ocean life, scientists study which marine areas are most important for conservation and where establishing Marine Protected Areas (MPAs) would have the greatest impact.

In their research, scientists examined how different marine species are affected by human activities such as fishing and environmental destruction. They evaluated each species based on two major factors: the likelihood of extinction and its evolutionary and functional uniqueness. Species that

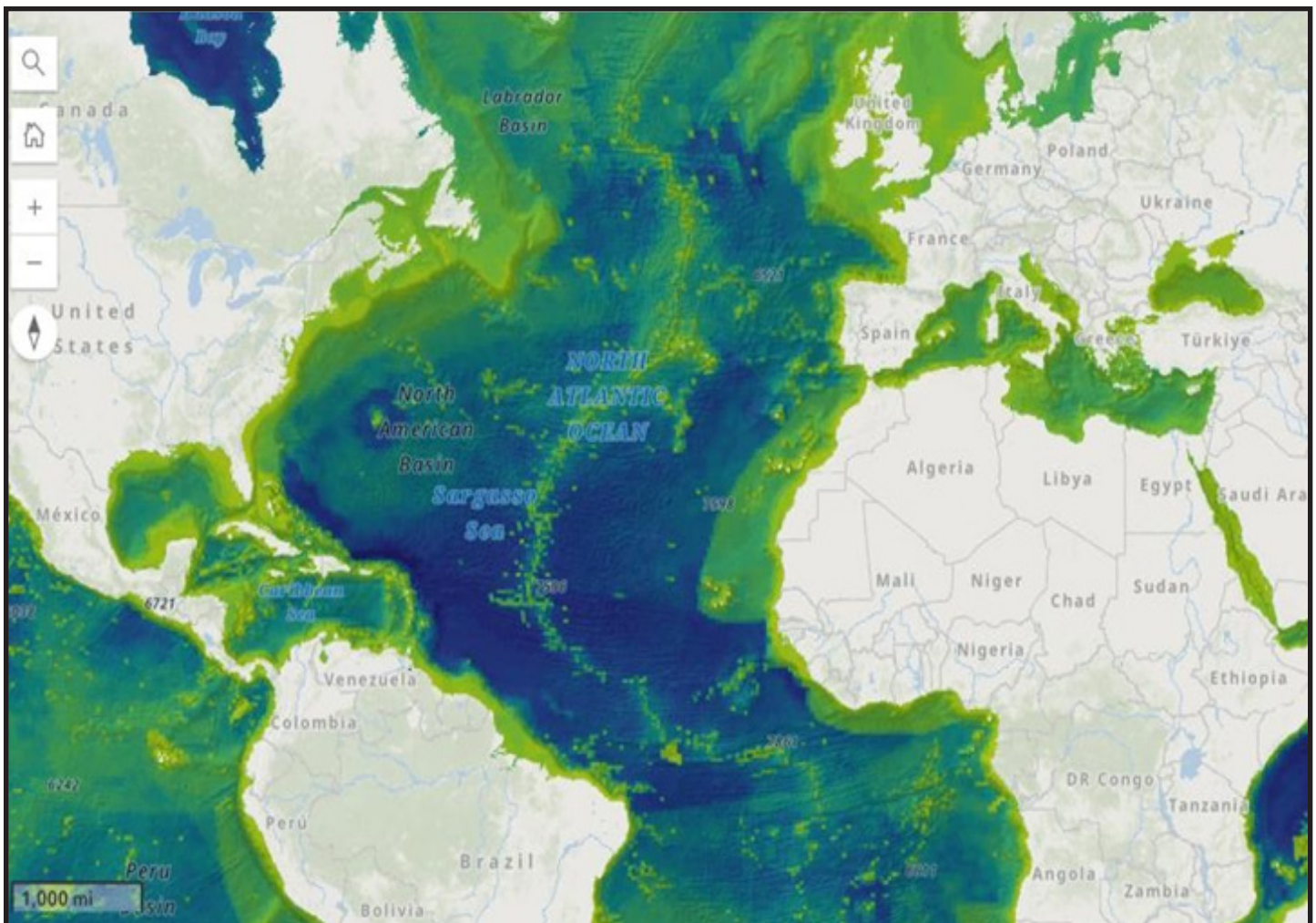
are rare or play an important role in the ecosystem were given greater importance in the study.

The researchers also considered where these species live in the ocean. Some species inhabit coastal waters, while others live in the deep sea or in pelagic zones, which are open-water regions far from shore. Another important factor included in the study was the presence of seamounts. Seamounts are underwater mountains that provide rich habitats for marine life and are known for their high biodiversity.

To organize the information, scientists divided the ocean into small

sections called cells, or pixels. Each cell was assigned a value ranging from zero to one based on the conservation criteria. A value closer to one indicated that the area was highly important for protection. Areas that were already protected were also given higher values for comparison purposes.

This biodiversity model helps identify the most valuable marine regions for conservation. By using tools such as the Pristine Seas and Protected Areas layers, researchers and policymakers can better explore these regions and make informed decisions about future marine protection efforts.



Courtesy: www.nationalgeographic.org