

WARMING WATERS (from page 14)

Hittinger, First Vice President of the Rhode Island Saltwater Anglers Association, attributes the species changes he has witnessed in local waters, at least in part, to rising water temperatures.

When the Warwick resident started fishing regularly more than four decades ago, Hittinger said he caught cod and pollack off Block Island and winter flounder in all of the state's bays. He noted that most of these fish are largely gone, replaced by warm-water species.

Speaking as a recreational angler, Hittinger said the changing of the species found in Rhode Island's salt waters isn't necessarily his concern. His concern lies with regulation that is slow to change with the times.

He used black sea bass as an example, noting that Rhode Island's recreational fishing restrictions on the species, implemented by the Mid-Atlantic Fishery Management Council, were set 20 years ago. Now, he said, there are a lot more of them.

Black sea bass caught in Rhode Island waters must be at least 15 inches in length and the limit is three or seven per angler per day depending on the season.

Hittinger noted that in New Jersey, where the fish is becoming slightly less plentiful, keepers must be at least 12.5-13 inches and the daily allowance is higher.

As the waters off the East Coast continue to warm, the Mid-Atlantic Fishery Management Council and the New England Fishery Management Council will likely be hearing similar concerns.

Stephen Hale, a longtime marine ecologist at the Environmental Protection Agency's Atlantic Coastal Environmental Sciences Division Laboratory in Narragansett, said marine animals are shifting northward along the Atlantic Coast in response to the changing climate.

He said the movement of a new species



Steve Hale

into an area can cause ecosystem disruption and that the depletion of key species from an area can lead to economic and social changes.

Hale noted that if your preferred habitat was warming to a level you found intolerable, you would basically have three choices: adapt (install an air conditioner, for example); move to a cooler locale (say Maine); or stay where you are and suffer the consequences (heat exhaustion, heat stroke, death).

He said many of the planet's other species can only exercise the second option, while others are stuck with the third.

Along the East Coast numerous marine species, including bottom-dwelling invertebrates such as clams, snails, crustaceans and polychaete worms, have shifted their ranges poleward in response to rising water temperatures caused by the global climate crisis.

Cold-water species such as cod, winter flounder and American lobster are moving to cooler locales.

Hale said species are trying to maintain their preferred thermal niche by moving poleward or into deeper water.

The Saunderstown resident, who retired from the EPA in 2018 after 23 years at the Narragansett lab, co-authored a 2017 study that covered two biogeographic provinces along the Atlantic Coast: Virginian, Cape Hatteras, N.C., to Cape Cod; and Carolinian, mid-Florida to Cape Hatteras.

The authors found that bottom water temperature increased 2.9 degrees Fahrenheit from 1990 to 2010. They also noted that the center of distribution of 22 out of 30 species studied shifted north in response to increasing water temperatures.

Seven species shifted south, but moved just one-third the distance of the northward-movers.

"Fishermen are adaptive," said Monti, a strong supporter of renewable energy development to address the climate crisis. "Every day is different with tides, currents, wind and bait. Warming waters and climate change are just additional factors. Regions are losing and gaining fish. It's not going to end."

OUTBOARDS VS STERN DRIVES (from page 15)

Serviceability

Because the entire engine is outside the boat, **an outboard is easier to service than an inboard**. With the boat on a trailer you can simply stand next to the outboard.

Servicing the inboard requires working under an engine hatch, often in pretty cramped confines. When an outboard is damaged or simply worn out, it is relatively easy to re-power the boat with a new outboard. Repowering an inboard boat is also an option, but a more-challenging project.

Additional Pros & Cons

An outboard has many advantages over a sterndrive:

- It's lighter, faster, more efficient, and easier to service;
- Because the entire engine is located outside the boat, there's more room in the boat for seating or gear storage;
- A new outboard is cleaner, quieter and more powerful and

feature-laden than the motors offered just a few years ago, all reasons they have become more popular on more types of boat. **A sterndrive does have some advantages**, however:

- The drive unit is low on the transom, which permits a full-width boarding or swim platform that's not cluttered by an outboard motor. This can really improve the lounging experience, and many people find this uncluttered look much more attractive.
- The sterndrive engine may also be covered by a padded sun lounge, another feature many owners appreciate.
- When equipped with a drive with forward-facing propellers (Volvo Penta Forward Drive or MerCruiser Bravo Four), the boat can be used for wakesurfing, an activity that's not safe—or even legal on most waters—behind a boat with a traditional sterndrive or an outboard because of the proximity of the spinning propeller to the surfer.