

## Assateague Channel

*Talking Points: Route Stops (North to South)*

### Osprey Nest

- Found on every continent except Antarctica
- An Osprey may log more than 160,000 migration miles during its 15-to-20-year lifetime. Scientists track Ospreys by strapping lightweight satellite transmitters to the birds' backs. During 13 days in 2008, one Osprey flew 2,700 miles—from Martha's Vineyard, Massachusetts, to French Guiana, South America.
- Ospreys are unusual among hawks in possessing a reversible outer toe that allows them to grasp with two toes in front and two behind. Barbed pads on the soles of the birds' feet help them grip slippery fish. When flying with prey, an Osprey lines up its catch head first for less wind resistance.
- Ospreys are excellent anglers. Ospreys catch average a fish every 4 dive attempts; also average 12 minutes of hunting before first fish caught
- The Osprey readily builds its nest on manmade structures, such as telephone poles, channel markers, duck blinds, and nest platforms designed especially for it. Such platforms have become an important tool in reestablishing Ospreys in areas where they had disappeared. In some areas nests are placed almost exclusively on artificial structures. Nesting platforms are incredibly successful with multiple instances of areas increasing their osprey population even beyond historical numbers.
- Osprey eggs do not hatch all at once. Rather, the first chick emerges up to five days before the last one. The older hatchling dominates its younger siblings, and can monopolize the food brought by the parents. If food is abundant, chicks share meals in relative harmony; in times of scarcity, younger ones may starve to death.
- Clutch Size- 1–4 eggs Incubation Period- 36–42 days Nestling Period- 50–55 days
- The name "Osprey" made its first appearance around 1460, via the Medieval Latin phrase for "bird of prey" (*avis prede*). Some wordsmiths trace the name even further back, to the Latin for "bone-breaker"—*ossifragus*.
- The oldest known wild Osprey lived in Virginia and was at least 25 years, 2 months old when it was found dead.
- The Osprey is the only hawk on the continent that eats almost exclusively live fish. In North America, more than 80 species of live fresh- and saltwater fish account for 99 percent of the Osprey's diet.
- Osprey nests are built of sticks and lined with bark, sod, grasses, vines, algae, or flotsam and jetsam. The male usually fetches most of the nesting material—sometimes breaking dead sticks off nearby trees as he flies past—and the female arranges it. After generations of adding to the nest year after year, Ospreys can end up with nests 10–13 feet deep and 3–6 feet in diameter—easily big enough for a human to sit in.
- Ospreys are a conservation success story and overall their populations grew by 2.5% per year from 1966 to 2015. Partners in Flight estimates a global breeding population of 500,000 with 21% spending some part of the year in the U.S., 28% in Canada, and 3% in Mexico. The species' decline was halted by pesticide bans and the construction of artificial nest sites. Osprey numbers crashed in the early 1950s to 1970s, when pesticides poisoned the birds and thinned their eggshells. Along the coast between New York City and Boston, for example, about 90 percent of breeding pairs disappeared. After the 1972 U.S. DDT ban, populations rebounded, and the Osprey became a conservation success symbol. But Ospreys are still listed as endangered or threatened in some states—especially inland, where pesticides decimated or extirpated many populations. As natural nest sites have succumbed to tree removal and shoreline development, specially constructed nest platforms and other structures such as channel markers and utility poles have become vital to the Osprey's recovery. Sadly, a growing cause of death for Ospreys is entanglement at the nest: the adults incorporate baling twine and other discarded lines into their nests; these can end up wrapped around a chick's feet and injure it or keep it from leaving the nest.
- Resident to long-distance migrant. Most Ospreys that breed in North America migrate to Central and South America for the winter, with migration routes following broad swaths of the eastern, interior, and western U.S. A few Ospreys overwinter in the southernmost United States, including parts of Florida and California.

### Assateague Bridge

- Resulting from the decline in the seafood and poultry industries on the island, a bridge to Assateague was first proposed in 1949 as a way to bolster tourism.
- The original design was planned to trace what is now the pony swim route near the south ends of both islands. This would have provided access to Assateague Point, which in the 1950s had much more sand than it does now.
- It took 13 years to build due to bureaucratic red tape, protests, and storms.
- By this time, the island was federally owned and many protests poured into the US Fisheries and Wildlife Department and Department of the Interior over the proposals, one of which included a highway up the entire island to Ocean City.
- Robert N. Reed, for which the downtown waterfront park is named after and a Chincoteague mayor, was a tireless advocate for the bridge. He helped form a commission and worked to push through all the red tape.
- The proposal eventually changed to the current route and was approved in 1959.

- Wylie Maddox (of which Maddox Boulevard is named after) procured a used bridge from near Atlantic City, New Jersey and shipped it down in sections.
- The Ash Wednesday Storm of 1962 halted construction on the bridge for several months. Interestingly, the storm ended up being a net positive for the island because it brought national attention to the island just as they were looking to bolster tourism.
- It was completed in September of 1962 and its original toll was \$1.25.
- In 1965, the Assateague Island National Seashore was established and removed the toll, the restaurant on the island and eventually replaced the original wooden and metal bridge with the current concrete one.

### Oyster Beds and Genetically Modified Aquaculture

- Oyster beds are used to farm oysters. The oysters are placed here once they are large enough to attach to the metal mesh and not fall though. Here they will grow for anywhere from a little less than a year to two years. Farmers will then harvest the oysters and sell them for profit. Oyster beds are also used to genetically modify the oysters that we are eating. Before they're placed out in this water, they are bred and specific traits are chosen. The farmers can buy from the hatchery the types of oyster that they want. Different traits can include being disease resistant, a stronger shell or even just a larger oyster.
- The Virginia Institute of Marine Science (VIMS) has an Aquaculture Genetics and Breeding Technology Center (ABC) on the other side of the Chesapeake Bay
- They use a combination of selective breeding and genetic research to domesticate the native Eastern oyster *Crassostrea virginica* for aquaculture. With the goal of helping to revitalize the economic value of oysters in the Bay, and to improve their value for farming to help the aquaculture industry meet humanity's growing appetite for seafood.
- The focus of ABC's efforts is to provide genetically superior brood stock to industry. Initial efforts emphasized development of disease-tolerant strains of *C. virginica*, whose population in Chesapeake Bay has been devastated by the diseases **MSX** and **Dermo** Disease. From the outset, two potential solutions were available—creating domesticated lines of oysters to withstand the two diseases, or introducing new species of disease-resistant oysters.
- Current efforts emphasize improvement of other production traits, such as growth and meat yield. Knowledge of oyster genetics also sheds light on the genetics of other shellfish.
- Today, ABC houses the single most extensive **breeding program** for oysters in the U.S., and arguably, the largest in the world. The Virginia oyster aquaculture industry is ripe with promise. Annual seed sales are nearing 50 million and demand for eyed larvae has increased from 30 million in 2003 to about 1.9 billion in 2008.
- Certain natural populations have been shown to harbor resistance to the diseases MSX and Dermo. For example, Louisiana oyster populations are tolerant to Dermo disease. We are systematically examining local Chesapeake Bay populations from 4 different rivers, which are believed to have developed tolerance to these diseases. Survivors from a two-year natural disease challenge will be used to develop a new line.
- Polyploidy is a genetic manipulation that can be used on plants and lower animals, like oysters. Polyploid plants or animals have more than the normal two sets of chromosomes (diploid): if three, they are triploid; if four, they are tetraploid. Many agricultural crops are cultivated as polyploids, such as, potatoes, peanuts, tobacco, wheat, oats, sugar cane, strawberries, blueberries, turnips, spinach, sugar beets, grapes, and tea. Triploids are common in bananas, watermelons, apples, and pears. Triploids are also particularly useful for oysters and it seems they are fast becoming popular in Virginia. Triploid oysters — we are suggesting the marketing name of “spawnless,” instead of triploid — have greatly reduced sexual maturity during the spawning season, thereby allowing marketing even during the months without “Rs.” Furthermore, triploid oysters seem to exhibit a hefty growth and, sometimes, survival advantage over normal diploids. In oysters, triploids are produced by crossing tetraploids (as the male) with diploids. Because the tetraploid sperm naturally has two sets of chromosomes (so-called di-haploid) when it combines with an egg from a diploid with one set of chromosomes, triploid embryos are produced. Tetraploids are produced through a patented process and ABC has a license to produce them for research. Moreover, ABC has been contracted by the company (4Cs Breeding Technologies, Inc.) that controls the intellectual property of tetraploidy to produce tetraploids for commercial purposes and distribute tetraploid sperm. ABC also performs quality control on sperm distributed and the larvae and seed produced (see below, Distribution). We believe that the potential for further improvements to triploid oysters is vast. Presently, we have focused on providing sufficient numbers of tetraploids to satisfy hatchery demand for triploid larvae and seed. But we have also begun a major research project to further test the value of triploids.

### Lighthouse

- Located on the highest point of Assateague Island
- 2004 the Coast Guard transferred its ownership of the lighthouse to the Fish and Wildlife Service but the CNWR is responsible for maintenance and upkeep of it
- The original lighthouse was constructed in 1833 and a stronger and taller lighthouse was built in 1867. A stronger and taller lighthouse was built in 1867.

- 142 feet tall and stands at 154 feet above sea level
- 1933 the lighthouse was converted to be run with electric lighting and the original Fresnel lens can be seen in the Chincoteague Museum.

### **Ponies (may want to save for service road)**

- The ponies were first thought to arrive on the island from farmers from the main land swimming them over to the barrier island to avoid a livestock tax and could save a little bit of money. The Assateague ponies are divided into two separate herds, the MD herd and the VA herd. Here in VA, the Chincoteague National Wildlife Refuge (CNWR) has a permit for 150 ponies while the herd in MD is a bit smaller, about 112 ponies. The ponies diet is the not best, consisting mainly of marsh grasses. It's very high in salt content, which is why the ponies always look bloated or like they're pregnant. The third week in July is the pony round-up and swim. The swim is across the channel from Assateague Island to Chincoteague Island and once on Chincoteague, they take them to the fairgrounds, which is where the penning and auction occur. They do have a vet check out all of the horses that are going to swim to ensure they are in good enough shape and condition so that they do not have any problems. The Saltwater Cowboys (Chincoteague's VFD) host this every year as a fundraiser for them and as a way to control and monitor the herd's population. Typically there will be a range of 60 to 90 ponies sold with a range from a few hundred dollars to a few thousand dollars, but it does range every year. When Surfer Dude's last son Blue Moon went for auction, he sold for \$25,000. There are spring and fall vet check for the ponies in VA which is different than the MD herd. National Park Service (NPS), who control and monitor the herd in MD, are much more hands-off with the ponies and will only give them a few vaccines and a birth control shot for population control.