

# Tides of time

This installment of the 'Tides of Time' series, 'Havens for long-distance travelers,' explores the Wadden Sea, inscribed on the World Heritage List in 2009, and Banc d'Arguin, inscribed in 1989



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Black-headed gulls, seen here in the Wadden Sea region, are among the many species of migratory birds that visit the World Heritage sites Wadden Sea, along Europe's North Sea coast, and Banc d'Arguin, along Mauritania's Atlantic coast.

MARTIN STÖCK

ECOSYSTEMS | Wadden Sea and Banc d'Arguin

## Migratory birds show the interconnected nature of the world's ecosystems

Saturday and Sunday, May 11-12, mark the eighth celebration of World Migratory Bird Day. The event calls attention to the world's migratory birds, the mystery and majesty of their long-distance lives, and their interdependence with man.

Bird migration paths connect all corners and almost every environment of the world. The connection between these "winged migrators" and the ecosystems they frequent is "older than mankind and is only partly understood," observes Gerold Lierssen, deputy secretary, data handling and information technology, of the Common Wadden Sea Secretariat. He notes that migratory birds are completely dependent on functioning ecosystems for all aspects of their life on the move, with sites for breeding, resting, molting and feeding that may be very far apart. The secretariat is a cooperative effort by the Netherlands, Germany and Denmark

"to protect and manage the Wadden Sea as a single ecological entity," according to a declaration signed by the three countries in 1982 and updated in 2010.

World Migratory Bird Day began in 2006 under the auspices of the United Nations, and this year's theme — networking for migratory birds — has special significance for the 16 World Heritage marine sites that serve as way stations or breeding grounds for feathered travelers.

Fanny Douvere, coordinator of Unesco's World Heritage Marine Program, emphasizes this interrelationship. If the marine environment is damaged, she says, it cannot support its related bird populations. The birds need certain food that is good for them as they migrate, and their

dietary needs change from site to site. They may eat insects in the north, then shellfish, worms and small reptiles in Europe and the south. The marine program is working to strengthen cooperation among World Heritage sites that are linked by bird migration.

An example of such a link is that between Banc d'Arguin, off the coast of Mauritania in West Africa, and the Wadden Sea, a site that stretches along the North Sea coasts of the Netherlands, Germany and Denmark. They represent two key points on what is known as the East Atlantic Flyway. This flyway is one of eight major migration routes worldwide and is used by a total of 90 million wading birds and shorebirds annually.

Banc d'Arguin is not the southernmost

point on the flyway, but it is one of the most important, hosting more than two million migrant shorebirds each winter, representing at least 108 different species, including the largest colonies of waterbirds in West Africa. The Wadden Sea is a key area on the flyway and is connected to a network of other key sites for migratory birds. It also plays a critical role in the conservation of African-Eurasian migratory wading birds and waterbirds. Up to 6.1 million birds may gather at the same time, and an average of 10 million to 12 million birds pass through it each year.

Although scientists still do not fully fathom the mysteries of migration patterns, some behaviors are understood. Marc van Roomen, senior project coordinator for the Wadden Sea Flyway Initiative, explains that birds on the East Atlantic Flyway breed in the north because conditions are favorable to

them. There are long hours of daylight in the far northern summer; birds can forage easily and so can their young, since insects are available almost all the time; and saltwater is healthier for the birds and their young than freshwater. Staying healthy is especially important for migratory birds. "They cannot afford to be sick," notes van Roomen.

The birds that fly to Banc d'Arguin when it is winter in the north expend a great deal of energy in making their journey. Once they arrive, however, they find foraging easier, and it is easier for them to maintain body temperature. In the end, says van Roomen,

birds expend the same energy, whether they fly to Africa or remain in a colder climate.

Aly Ould Mohamed Salem, director of the Banc d'Arguin National Park, says that the recognition of Banc d'Arguin and the Wadden Sea by Unesco and the work of the World Heritage Centre has helped establish cooperation between the sites for the conservation of the migratory birds that stop at both sites. "This recognition," Salem adds, "also allows us to be part of a worldwide network of managers of World Heritage marine sites and to benefit from their expertise."

C.F.

WADDEN SEA | North Sea wetlands

## A wild place in a densely populated European region

Deep in the heart of one of the planet's most densely populated regions are pristine wetlands called the Wadden Sea. Stretching more than 500 kilometers, or 310 miles, along the North Sea shore of the Netherlands, Germany and Denmark, the "sea" is a warren of waterways between the mainland and offshore barrier islands.

An average of 10 million to 12 million migratory waterfowl pass through the Wadden Sea each year on their annual transits along the East Atlantic Flyway between northern Europe and Africa. More than six million birds can be present at any one time, one of the world's highest concentrations of avian life.

The name means "mudflats" in both German and Dutch, and that's what much of the Wadden Sea is — the world's largest unbroken system of intertidal sand and mudflats. But it contains many other habitats, including tidal channels and salt marshes, sea-grass meadows and mussel beds,

beaches and dunes, as well as the busy Elbe River estuary and popular holiday spots like Sylt Island.

This geographic mosaic provides a habitat for more than 5,000 species of flora and fauna. Among these are 35 species that are monitored as particularly important Wadden Sea breeding birds, such as Arctic terns, avocets, oystercatchers, dunlins, ruffs and common snipes.

Covering roughly two-thirds of the wetlands, the Unesco World Heritage site, listed in 2009, includes offshore islands as well as existing preserves like Germany's Lower Saxony Wadden Sea and Schleswig-Holstein Wadden Sea national parks.

Perhaps the site's most remarkable aspect is that such a large-scale intertidal ecosystem passed into the 21st century largely untouched by the human activities that have swirled around it.

For centuries, this region was the fulcrum

of Hanseatic League trading activities and ports that shipped much of Germany's industrial output to the outside world. Several of Europe's largest urban areas, including Hamburg and Amsterdam, sit on its doorstep. Yet the Wadden Sea's natural processes continue to function largely undisturbed.

That's not to say there aren't threats, among them fishing activities, industrial facilities, maritime traffic, residential development, tourism and climate change. One of the most pressing issues is declining avian breeding success. The rate of decline is accelerating, and several bird species are now on the brink of extinction.

In April, the Common Wadden Sea Secretariat convened a workshop of experts to identify the reasons for low breeding success and create an action plan to stem the decline. Among the causes were predation, flooding, depleted food stocks and habitat disturbance.

J.R.Y.

BANC D'ARGUIN | Western Saharan marshlands

## A major feeding and breeding ground for millions of birds

It's about as far off the beaten path as you can get on planet Earth, perched between the Atlantic Ocean and the western edge of the Sahara Desert. But for millions of birds, Mauritania's Banc d'Arguin, which lies along the East Atlantic Flyway, is a major place to meet up and mingle with their own species each year during their migration from northern climes to warmer regions.

"The importance of the Banc d'Arguin National Park for bird life," says Aly Ould Mohamed Salem, director of the park, "reveals biodiversity that is remarkable on a world-wide scale." Each year, as many as 2.5 million birds — the world's largest concentration of winter waders — rest, feed and breed among the coastal wetlands, small islands and shallow offshore waters that

comprise the World Heritage site, inscribed in 1989.

"More than 250 species pass through the park each year during their migration," says Salem, "and more than 50 species spend the winter within the park." Among the species that use the Banc d'Arguin are hundreds of thousands of flamingos, plovers, terns, godwits and redshanks. Other typical species include the white pelican, European spoonbill, western reef heron and reed cormorant.

A stark contrast to the nearby desert, the Arguin wetlands and offshore waters offer a bounty of nutrients and organic matter — copious fish stocks, sea-grass beds, marsh plants, insects and even microorganisms. A lack of predators and protection provided

by the marshlands — in combination with almost no human interference — make the area ideal for avian breeding.

As they have for hundreds of years, the Imraguen people continue to live along this coast, but in very small numbers. They survive on traditional sailboat fishing and have little impact on park ecology.

The biggest threat to the site's integrity is international commercial fishing and new methods that threaten to deplete the region's fish stocks. Authorities are also concerned about the impact of a major oil spill or oil tanker wreck along the coast. Tourism is virtually nonexistent at present, but other threats include poaching and illegal logging in the site's terrestrial zones.

J.R.Y.

### Precision and artistry in rendering the beauty of nature

What draws us to the mystery of bird migration is not only its seasonal precision but our fascination with the birds themselves. The spotted black and gold of the European golden plover or the brick-red breast and blue legs of the bar-tailed godwit are part of nature's artistry.

Beauty and functionality are also present in fine watches that transcend timekeeping to become true works of art through techniques such as enameling.

The hand-enamelled cases and dials produced by Jaeger-LeCoultre require manual skill honed over years and an artist's eye. First the enamel artist coats the dial with successive layers of transparent white enamel. Then the artist, using a goose feather or a very fine brush, applies metal-

oxide pigments in a broad spectrum of colors to this base. Next, the dial is fired in a kiln several times until the exact hue is reached. Each stage of firing at high temperatures represents a major risk for the dial. To ensure precision of the watch mechanism, the enameler's brush strokes must be equally precise so as not to exceed the exacting tolerances of around two-tenths of a millimeter, or less than a hundredth of an inch. A single dial requires between 80 to 150 hours of fine craftsmanship.

"The difficulty is to obtain an artistic combination of different materials on a small surface," says Janek Deleskiewicz, artistic director at Jaeger-LeCoultre. "The dial of the Rendez-Vous Tourbillon Wild is made

with 366 diamonds, mother-of-pearl and feathers. Jewelers, enamellers, guilloché artists, engravers and watchmakers prove able to create the perfect alchemist's blend of technique and aesthetics."

Miklos Merczel, the manufacture's enamel artist, adds: "There is still innovation in this sphere," and cites the use of "blanc de Limoges" enamel on the Master Grand Tourbillon Enamel with swans.

That birds are featured on such exclusive pieces is no coincidence. Birds pass on their sense of purpose and precision from one generation to the next, just like the artists of Jaeger-LeCoultre's unique enamel atelier, who practice one of the 180 skills of the manufacture in the Vallée de Joux.

C.F.

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