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Invasion of the alien jellyfish - coming to a holiday beach near you

By Elizabeth Nash in Madrid

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An unprecedented invasion of poisonous jellyfish is sweeping southern Europe, heralding a potentially irreversible shift in the marine ecology of the Mediterranean, scientists warned this week.

The plague - described by one leading environmental campaigner as "spectacular" - stretches from the Azores in the Atlantic to the Ligurian Sea off the coast of Italy, and is largely the product of what we are doing to the marine environment, biologists say.

Overfishing in ever warmer and more polluted waters has produced an attractive habitat for all sorts of jellyfish which have crowded the Mediterranean this summer. The result, for Britons bathing off the sea's beaches, has been painful. The undulating, glutinous creatures with their trailing poisonous tentacles have stung thousands of holiday-makers in recent weeks, and Costa hoteliers say anxious visitors are shunning Spanish beaches in consequence.

This year the Spanish Red Cross has treated up to 15,000 people for jellyfish stings, nearly twice the number treated in the whole of 2004. In July, more than 6,000 were stung; a swimming race in Alicante led to 200 of the 500 contestants being stung; and, only last Thursday, four tons of stranded jellyfish were carted from the beach at Marbella on the Costa del Sol.

Jellyfish have long been unwelcome summer visitors to southern Europe, but this year's mass mobilisation has sounded the alarm among oceanographers. "Jellyfish are a natural part of the marine environment, but the scale of what's happening is a warning that something's very wrong," says Dr David Santillo, a marine biologist for Greenpeace research laboratories at Exeter University.

Climate change is partly to blame: lack of rain has meant a shortage of cold fresh water entering the sea from rivers, producing a warmer, saltier sea which jellyfish like. Human sewage, and fertilisers from intensive farming along the Mediterranean coast, produce a rich soup of nitrogen and phosphates which jellyfish also like. Prevailing winds have helped push the creatures landwards.

Meanwhile, their natural predators, larger fish and crustaceans, have all but vanished from the deep, decimated by overfishing. And marine turtles - their main predator - are threatened with extinction as the beaches where they lay their eggs, from Asia to Latin America, are ravaged by tourism.

Jellyfish plagues have happened before, in cycles of 10 to seven years, but recent cycles are shorter, and the blooms bigger, denser and longer lasting. "This year's increase has been spectacular," says Xavier Pastor, director of the environmental organisation Oceana, who recently completed a transatlantic trip in the catamaran Ranger. "Unless we reduce fishing to recover the ecological balance, protect habitats so that populations can recover, and reduce toxic wastes, the situation will deteriorate irrevocably."

The French-Canadian biologist Daniel Pauly paints an apocalyptic vision of oceans taken over by jellyfish: "We are moving from a marine ecosystem dominated by big fish to a soup of small organisms. If we go on like this, the only things in the sea will be jellyfish and plankton soup."

WHAT & WHERE

Moon jellyfish

(*Aurelia aurita*) Transparent bell, 40cm in diameter. Abundant on British coasts. Tentacles inflict mild sting.

Mauve stinger

(*Pelagia noctiluca*) Bell up to 10cm with purple and pink warts. Inflicts burning sting; a high level of venom can be deadly. Found in Mediterranean.

Portuguese man-of-war

(*Physalia physalis*) Not a jellyfish but rather a colony of hydrozoans. The toxic nematocystson ends of 30m tentacles can cause shock and death. Rare in UK.

Lion's mane jellyfish

(*Cyanea capillata*) Up to 2m. Red-brown. Inflictsparalysis and suffocation. Common off Scotland's west coast.

Compass jellyfish

(*Chrysaora hysoscella*) Brownish v-shaped markings on bell, up to 30cm. Found around the UK coast; inflicts a mild sting.

Fried egg jellyfish

(*Cotylorhiza tuberculata*) Brownish-yellow, up to 35cm; stings up to 6m long. Inflicts mild sting. Common in Aegean and Adriatic.

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