

BY THE NUMBERS

12,000–24,000 Tons of plastic that deep-dwelling North Pacific fish ingest each year, based on findings from the Scripps Environmental Accumulation of Plastic Expedition, known as SEAPLEX.

€80.2 billion Initial proposal by the European Commission for research and innovation funding in 2014–20 under the Horizon 2020 program (formerly called Framework). That would be a 46% increase over current spending.

50% Loss in the amount of land suitable for cultivating premium wine grapes in high-value areas of northern California by 2040 because of global warming, according to a projection in *Environmental Research Letters*.

>>FINDINGS

journey once again. Reporting in *Marine Ecology Progress Series*, the scientists—from Canada, the United States, Australia, and New Zealand—confirmed that some of the females had migrated from the southern islands to New Zealand by comparing the DNA in tissue samples collected from seven whales at both sites. Now that the tradition has been restored, scientists expect more whales to follow the pioneers.

Tiny Bug Makes a Riot With Its Privates

The world's loudest animal relative to its size has been revealed to be a tiny bug with a big organ. Specifically, the water boatman, *Micronecta scholtzi*, rattles its penis along grooves in its abdomen to produce a chattering song—that registers at 99.2 decibels—about the volume of a loud orchestra when heard from the front row. Scientists presenting at the Society for Experimental Biology's

Random Sample**Miniature Art Masters**

Microbiologist Rosa María Montes Estellés once infected a church mural with bacteria. But it was for a good cause: The bacteria ate their way through 4 centuries of grime encrusted on a mural at Santos Juanes Church in Valencia, Spain, exposing the underlying colors.

Bacteria are only the latest tool in the art restorer's arsenal. Restorers use microabrasion, burly bristles, and chemical washes to strip layers of pollution from buildings, statues, and paintings. But each method has shortcomings: They can put the underlying artwork at risk or poison workers, and they often require slow and painstaking manual labor. So in 2005, a group of Italian art restorers tried a new tack: They bred bacteria to remove an obstinate layer of collagen from the murals of Campo Santo di Pisa.

At Santos Juanes, the offending material was a crusty white mixture of salt, sulfates, nitrates, and carbon, originating from centuries of rainwater mixing with deposits from nesting birds and insects in the roof above the murals. Over time, the material slid downward, encrusting the paintings, where it fermented together with atmospheric pollutants. Montes and colleagues at the Polytechnic University of Valencia selected and "trained" a nitrogen-loving type of bacteria, *Pseudomonas stutzeri*, to eat the noxious blend.

How to apply the bacteria was a challenge. After testing different materials, Montes and biologist Pilar Bosch chose a gel that keeps the bacteria wet and alive but doesn't sink into the underlying paint. The team's preliminary results will appear in a forthcoming issue of *Arché*. Meanwhile, Montes hopes to develop more and better treatments customized for different surfaces and pollutants.



annual conference in Glasgow recorded the bug and analyzed its volume compared to various other loud animals. Even though the water boatman does its "singing" from the bottom of rivers to attract mates, humans walking along the riverbank can clearly hear it. The area along its abdomen that the bug uses to make the noise is about the width of only a human hair, and researchers aren't sure exactly how it produces so loud a song. http://scim.ag/Water_boatman

New Drug Hope for 'Aging' Kids

A drug already approved to treat cancer and prevent the rejection of transplanted organs may be the next hope for children with progeria, a rare disease that resembles accelerated aging and typically kills those afflicted by their teen years. In studies on cells from those with the disorder, the drug, rapamycin, promoted clearance of the mutant protein dubbed progerin and extended the cells' survival, reports a group that includes Francis Collins, director of the U.S.



National Institutes of Health, in the 29 June issue of *Science Translational Medicine*.

The buildup of progerin inside the nuclei of cells distorts their shape and somehow initiates a diverse set of normally age-related symptoms such as as loss of hair, brittle bones, stiff skin, and cardiovascular disease. Three drugs that seek to impair the synthesis of progerin are already being tested in about 50 afflicted children, but rapamycin may offer an alternative, complementary strategy, says Collins. Given the short life span of someone with progeria, researchers and physicians are now debating whether mouse studies are needed before proceeding with a clinical trial of an oral form of rapamycin that has shown tolerable side effects in children. <http://scim.ag/agingkids>