

## Arctic seals and coral reefs: Every little bit helps

by GWYNNE DYER

Without extinction, there would likely be insufficient ecological 'space' available for new species.

What? Is this person saying that extinction is a good thing? But what about the scarlet-throated goat-botherer? There's only 23 of them left in the wild, and half of them live on the slopes of an active volcano. We must do something.

Not necessarily. I was idly leafing through the pages of a textbook on Historical Geology, and I chanced on this passage:

The pattern we see in the fossil record is not one of continuous diversification with new species being added, but none ever removed. Instead, the average species lasts a few million years, and then vanishes forever from the face of the planet. It goes extinct.

Human beings are uncomfortable with this fact, because we feel guilty for accelerating the extinction of so many other species. Our attempts to make amends began with simple measures like nesting boxes for rare owls and wildlife bridges over busy highways - local fixes for local problems - but global warming requires more complex interventions.

Consider, for example, the ringed seals of Lake Saimaa, the biggest lake in Finland. They are freshwater seals unique to this lake, and 30 years ago they were nearing extinction. In winter they used to build shelters into snow-banks on the ice to protect their pups from storms and predators, but in a warming climate the deep snow-banks have disappeared.

So, people from Finnish parks and wildlife agencies are going out each winter with hand-held snowplows to create manmade snowdrifts on the ice. They even stomp the piled snow down tight, although they leave the final excavation of the dens to the seals themselves. And the seal population has recovered on Lake Saimaa - up to 400 adults at last count.

It's a much bigger deal when an entire existing ecosystem threatens to go extinct, but the first such event is now knocking at our door: the mass death of the coral reefs.

Almost all the world's shallow-water coral reef systems are now suffering bleaching episodes that leave them severely damaged or just dead. It's a direct result of global warming: the added heat causes the little coral animals to expel the algae that provide most of their food. Then they starve to death, leaving only the bleached 'bones' behind.

That's a poor design for the present circumstances, although it must have had some practical benefit in the past to make it through the evolutionary process at all. Given how many other environmental crises we are now facing, however, we could be excused for just letting the corals go.

Extinction is not a measureless catastrophe, just the normal end-point in the evolutionary trajectory of the vast majority of species that have flourished on this planet. Whatever is lost will be replaced with something else, often something more interesting than its predecessor.

The thousands of coral species died back, or even died out, in each of the five great extinction episodes of the past half-billion years, only for identical or similar creatures to recolonise the reefs when the climate moderated again. As Ariel suggests in *The Tempest*, nothing is ever really lost. It just 'suffers a sea change into something rich and strange'.

However, the current array of coral species has a certain economic value to human beings (though surely not the six trillion dollars claimed by the World Wildlife Fund). Moreover, the corals have a powerful emotional importance to the divers (including my entire family) who actually spend time with them. So many people are trying to save them.

The effort that has made the most progress is an attempt at 'assisted' evolution. It's really a glorified form of selective breeding, choosing the most heat-resistant of each generation of coral polyps as the parents of the next generation and discarding the rest. This may or may not include direct genetic modification of the corals or their symbiotic algae.

A second intervention is working on a sort of 'coral IVF' (in vitro fertilisation) in which the goal is to ensure that a large proportion of the 'gametes' (male and female) that are released into the ocean when corals breed actually take root.

This may involve 'coral condoms' to capture large numbers of the gametes in a cone-shaped net and move them to heat-devastated areas when they can create new colonies. Weirdly intrusive, but it seems to work.

And then there is the direct method: Marine Cloud Brightening (MCB). Stop the bleaching at source by putting a very fine mist of seawater into low-lying clouds so that they reflect incoming sunlight and cool the reefs beneath.

And if it all fails, don't feel bad. The corals will be back for the next iteration, even if we aren't.