NMFS is not challenging the judge's decision, but is instead redoing its risk analysis to include hatchery fish. In the interest of avoiding politically charged debates, NMFS is likely to skirt the issue of exactly what role hatchery fish play in the pursuit of its resource management goals. But coho salmon are not the only species that conservation biologists attempt to 'save' by artificial propagation, and biologists need to get ahead of the technology and explore the long-term consequences of relying on hatcheries and other artificial methods for species preservation. *PK*

Griffon vultures in India are critically endangered

Two of India's most common vultures (the white-rumped vulture and the long-billed vulture, both of the genus *Gyps*) have declined by >90% over the last decade, with the decline recently expanding to Nepal and Pakistan (http://www.vulturedeclines.org/). The cause is unknown, although some data suggest that an infectious disease is responsible. The London Institute of Zoology, the Bombay Natural History Society, and the National Bird of Prey Centre are now collaborating in an intensive and extensive study funded by the Royal Society for the Protection of Birds and the Darwin Initiative for the Survival of Species (http://www.defra.gov.uk/environment/darwin/index.htm) to try and determine the underlying cause of this decline.

Vultures play an essential role as nature's 'garbage men'. If their numbers decline further, it is likely that corpses will fester for prolonged periods of time, and that other less hygienic scavengers, such as rats, will replace the vultures. Feral dogs are already increasing in number in some regions of India where vultures have disappeared, and the possibility of rabies outbreaks is of increasing concern. The spread of other diseases, such as TB, anthrax and foot-and-mouth, is greatly amplified by rotting corpses, and is a very real threat in Africa, where vultures clean the corpses of millions of wild animals. Humans are also served directly by these birds in some areas. For example, the Parsee, an Indian religious sect, has relied on vultures for centuries to cleanse their dead, which are stacked in specially constructed 'towers of silence'. Followers are forbidden from contaminating the earth, fire or water with corpses, and vultures have traditionally provided a remarkably rapid and sanitary method of disposal.

There is a lesson for conservation biology here: whereas charismatic animals, such as whales and pandas, are the poster animals for many conservation organizations, it might well be species such as vultures whose loss would have the greatest impact. *PK*

Will conservation organizations be willing to measure their failures?

Both governmental and nongovernmental conservation organizations market their mission and promote how much good they are doing for the protection of biodiversity and renewable resources. Although the 'bad news' of each environmental crisis is loudly announced, the 'bad news' of a failed conservation action or strategy is rarely mentioned. To elicit funds, there is enormous pressure to advertise an organization's successes. This, however, creates a serious obstacle for real conservation success because we end up not knowing which conservation practices work and which ones fail. Without a frank evaluation of how much progress is made by different conservation projects, we have no way of learning how to improve on our efforts.

Several conservation organizations have realized the need to be more accountable and are struggling to develop methods that measure their effectiveness. For example, a newly established nonprofit enterprise, Foundations for Success, has as one of it core objectives the development of tools for the practical measurement of conservation progress and effectiveness (http://www.fosonline.org/). Similarly, The Nature Conservancy has launched an auditing program aimed at evaluating its own on-the-ground achievements, as an extension of its 'measures of success' monitoring approach (http://www.conserveonline.org). Of course, it is interesting to note that these nascent auditing efforts emphasize 'measuring success'. The challenge will be in promoting the honesty required to allow organizations to admit failures. When in the business of pursuing an idealistic and optimistic vision, it is hard to address bad news. But only if conservation organizations document and seriously analyse their failures will their hopefulness amount to anything. *PK*

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Where is the climate?

As part of their recent review in *TREE* [1], Danovaro *et al.* discuss how some recent changes in the physicochemical characteristics of the eastern Mediterranean deep-sea ecosystem might be related to the eastern Mediterranean Transient (EMT) and climate change. Their consideration of climatic forcing that might induce changes in the structure and function of the ecosystem was limited to El Niño Southern Oscillation (ENSO) events only. However, wintertime variability in the Mediterranean Sea is also strongly related to two other major climatic oscillations, the North Atlantic Oscillation (NAO) [2] and the Arctic Oscillation (AO) [3]. Furthermore, during the summer, teleconnections have been observed with the Indian monsoon [4]. The strengthening of the NAO from the late 1980s to the 1990s has been linked to the influx of fresh water into the eastern Mediterranean basin, as well as to the appearance of the EMT [5]. The formation of deep water in the Aegean Sea during the EMT event might also have been related to fluctuations in the AO, because positive anomalies appear to co-occur with the strengthening of the northerly winds over the Aegean Sea [6]. Changes in the salinity of the Modified Atlantic Water (MAW), observed in 1990 at the Strait of Sicily, could also be related to the NAO [7], and could be an important factor in altering the salt budget for the eastern Mediterranean Sea. Changes in the thermohaline in the eastern Mediterranean have been simulated in a recent model [8] that provides a better understanding of the deep-water renewal in the eastern Mediterranean Sea and potentially links climatic oscillations to changes in ecosystem processes. There is a need for a better understanding of the role that nutrient dynamics and new production [9]

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might play in the deep-sea ecosystem processes of the eastern Mediterranean Sea [1]. Hence, consideration must also be given to the climatic variability associated with the NAO and AO.

With regards to the ecology of the eastern Mediterranean Sea, the community structure of free-living bacteria in the Aegean Sea [10] (referred to as operational taxonomic units), suggests the presence of a distinct deep-water, compositionally complex, free-living (and to a lesser extent attached) bacterial community in the absence of temperature as a potential regulating factor. Recently, bacteria–phytoplankton coupling in the eastern Mediterranean Sea has been related to changes therein of the trends of bacterial and phytoplankton production [11]. How can these changes be related to biogeochemical cycles and climatic variability? A longer time series of data is needed if we expect to draw robust statistical inferences linking the ongoing decadal variability that characterizes climatic oscillations, such as the NAO and the AO, to the ecosystem dynamics in the eastern Mediterranean deep-sea, the Mediterranean basin and the adjacent North Atlantic.

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Where is the climate?

Response from Danovaro, Dell'Anno, Pusceddu, Fabiano and Tselepides

We provided an ecological perspective of the possible influence of climate change on the deep sea, the largest ecosystem on Earth [1]. Although trying to understand how climate forcing originated is important, this was not the scope of our review. Conversely, Belgrano [2] focuses attention on the possible climatic forcing that might be related to changes in the physicochemical characteristics of the eastern Mediterranean. We documented how deep-sea ecosystems respond to actual temperature and salinity changes observed on a decadal scale, but we did not wish to infer possible cause–effect relationships between the wintertime variability in the Mediterranean Sea and major climatic oscillations. Although the North Atlantic Oscillation (NAO) and the Arctic Oscillation (AO) might have a role in eastern Mediterranean Transient (EMT) dynamics, this does not affect our ability to understand how the deep eastern Mediterranean ecosystem responds to such changes. Very few examples are available for the deep sea and these are restricted to El Niño Southern Oscillation (ENSO) events. Ecologists always need longer time series to strengthen their conclusions, and this applies particularly to the deep sea where collecting long-term data is difficult and expensive. However, the EMT works as a model because physicochemical changes tend to recover to conditions before change within a decade. This model allows us to focus on the link between deep-sea ecosystem functioning and climate change rather than on long-term trends.

Belgrano also queries whether temperature is a relevant regulatory factor of bacterioplankton assemblages, using Moeseneder *et al.*'s work [3] as evidence. However, the conclusions of Moeseneder *et al.*'s work [3] have nothing to do with the conclusions drawn by Belgrano, because the role of changing temperature in regulating the structure and activity of microbial assemblages was not tested by the former. Recent comparisons of bacterial and phytoplankton production in the western and eastern Mediterranean [4] do not allow us to draw conclusions about temporal trends related to climate change. Limited information is available on long-term effects of small temperature changes on the microbial components of food webs [5]. However, it is expected that a distinct assemblage of deep-sea benthic bacteria, adapted to steady-state conditions, would be impacted by abrupt physicochemical changes. We know much less about the extent and direction (positive or negative?) of such an impact and further work is needed from this perspective.

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