

Unexpected timing of mature female sturgeon migration in the Danube River

The Critically Endangered Beluga sturgeon *Huso huso* persists in diminished numbers in the Black Sea, the Sea of Azov, the Caspian Sea and their tributaries, along which adult sturgeons migrate for reproduction after spending years at sea. In July 2023, on the Chilia branch of the Danube River near Ismail, Ukrainian law enforcement intercepted poachers capturing a c. 110 kg mature female carrying 14 kg of eggs. The extraordinary aspect of this news is in its timing, as adult sturgeons typically enter the Danube River for reproduction in the autumn or early spring.

The observed gonadosomatic index (GSI) of 12.7 corresponds to stage 3 or 4 of oocyte maturation, just before egg deposition. However, to exclude the possibility the eggs were resorbing as a result of failed reproduction, an analysis of the eggs would have been necessary. Unfortunately, this analysis was not possible because the caviar was seized. Capturing an adult female with such a substantial number of eggs in the middle of summer is rare. The previous known case dates from August 2004 when a female was captured in the Danube River with a GSI of 11.2. Historical data indicate an estimated GSI of 3.69 in July 1967 and 2.42 in July 1968, based on 24 and 18.5 t of females, respectively.

The fishing technique employed excludes the possibility that the animal was migrating downstream, but it is challenging to determine whether this female was very late for the spring migration of 2023 or very early for the autumn migration of 2024. The critical factor, however, is the degree of variability in the timing of migration. Although shifts in the phenology of reproduction and the relationship of this with climate change have been extensively studied in terrestrial organisms, these matters have received less research attention in aquatic organisms. Such observations could offer a monitoring tool for understanding the impacts of global warming on sturgeon populations. Looking ahead, the consequences of increased water temperatures could extend across the entire life cycle, influencing the growth rate and potentially leading to an earlier reproductive age, as hypothesized for other anadromous species such as salmon (Rinaldo et al., 2023, *Journal of Fish Biology*). Recognizing the importance of these dynamics, we recommend establishment of monitoring to evaluate the extent of apparent out-of-season sturgeon migrations and to assess the potential effects of climate change on sturgeon reproduction.

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Saving the Endangered daisy tree *Scalesia cordata* from the brink of extinction on the Galapagos Islands

The giant daisy tree *Scalesia cordata* is one of 15 species of the endemic Galapagos genus *Scalesia*. It is restricted to the humid zone of the Sierra Negra and Cerro Azul volcanos on southern Isabela, where it used to form a dense forest, home to endemic Darwin's finches and flycatchers. This forest covered an area of c. 17,300 ha in the 1900s but today only c. 0.1% of the original distribution remains, mainly as a result of land-use change, fires and, recently, invasive plant species, especially guava *Psidium guajava*, blackberry *Rubus niveus* and Siam weed *Chromolaena odorata*. These invasive plants form a thick and dark understorey that prevents germination of the small and light-dependent *S. cordata* seeds. This interruption of natural regeneration has caused a marked decline of *S. cordata*. Of 1,075 trees recorded in 2002 only 17 remained in 2019, and the Charles Darwin Foundation and the Galapagos National Park Directorate estimated then that there were only c. 300 individual trees left in the wild. *Scalesia cordata* has been categorized as Endangered on the IUCN Red List since 1998 but the assessment is outdated. The 2019 data indicates that *S. cordata* should be categorized as Critically Endangered.

In 2021, with funding from the Keidanren Nature Conservation Fund (Japan) and Fondation Franklinia (Switzerland), we embarked on a mission to save the giant daisy tree from extinction. From drone imagery of > 500 ha and several field trips, we have so far identified and mapped 980 *S. cordata* trees and the invasive plants threatening them. Control of invasive plants is being carried out, and this has facilitated the natural regeneration of a total of c. 150 *S. cordata* seedlings at some of the study sites. We have also managed to propagate c. 800 *S. cordata* seedlings in the Galapagos National Park Directorate greenhouse, and these have been planted at several study sites. Two years of intense conservation efforts resulted in the recording of a total of almost 2,000 *S. cordata* trees on southern Isabela in October 2023.

However, the survival of *S. cordata* is not yet secure. It has a low number of fertile seeds when self-pollinated, despite being a short-lived tree (10–15 years). We therefore have to continue restoration efforts until self-sustaining *S. cordata* populations are established.

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Rediscovery of *Barleria maclaudii* (Acanthaceae) in Guinea after 86 years

Barleria maclaudii Benoist (Family Acanthaceae) grows in savannah and woodland mosaics on lateritic slopes at 150–700 m altitude. Described by Raymond Benoist in 1911, it was initially discovered in Fouta-Djalon (Guinea) in 1898. Formerly, the most recent observation in Guinea was in 1936, near Dinguiraye. Additionally, it has been recorded in Senegal and Mali, with a total of 4–5 localities across these three countries. The extent of these localities is poorly understood, as they are only known from seven herbarium specimens. For these reasons, and because of known threats at some of these localities, the species is categorized as Endangered on the IUCN Red List.




However, in October 2021, after 86 years without records, *B. maclaudii* was rediscovered in Guinea, around the village of Kokoun Thimbohé (sub-prefecture of Kollet), within the Moyon-Bafing National Park in Fouta-Djalon. During November 2022–June 2023, the species was recorded in c. 20 more localities in the Park, with half of these in the core protected area and high conservation value zones. The localities cover a total extent of occurrence c. 1,460 km², and we estimate that the total known area of occupancy is at least 7 km², with a population size of c. 8,000 individuals. The altitude range of the localities is 417–772 m, slightly exceeding the previously known upper limit.



Barleria maclaudii Benoist in Kokoun Thimbohé (Moyon-Bafing National Park): (a) habitat and (b) inflorescence with a flower. Photos: Camille Rieder.

These new observations facilitated photographic documentation and seed and herbarium specimen collection. The species' perennial nature was confirmed: despite annual bushfires, the woody bases persist and appear to be fire-tolerant. Flowering is September–November, and the species grows on skeletal laterite soil in the understory of woodland dominated by *Terminalia macroptera* Guill. & Perr.

This discovery of several localities in Moyon-Bafing National Park greatly improves our knowledge of this species in Guinea. However, populations in Senegal and Mali have not been surveyed recently and the species' known minimal area of occupancy remains less than the 500 km² threshold for categorization as Endangered. As there is an ongoing threat from slash-and-burn agriculture within the Park, and a population increase has not been documented, categorization as Endangered under criterion B2ab(ii,iii) remains appropriate pending further study.

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A new-born Arabian leopard cub at the Wild Mammal Breeding Centre in Oman

The Arabian leopard *Panthera pardus nimr* is a Critically Endangered subspecies that roamed in both the northern and the southern mountains of Oman until the 1970s. Today, however, it occurs only in the Dhofar Mountains in the south, where a population of c. 50 remains (Al Hikmani & Spalton, 2023, *Oryx*, 57, 283–284). In 1985, in an early effort to prevent the Arabian leopard from becoming extinct in the wild, a captive breeding group was established at the Wild Mammal Breeding Centre in Muscat, Oman. This was the first breeding programme for this species. The programme started with four wild-caught Arabian leopards from Jabal Samhan in southern Oman, and the first captive bred Arabian leopard was born in the Centre on 16 May 1989. Between 1989 and 1997 the programme successfully bred and received 10 cubs. However, with an ageing captive group the last cub to be born in the Centre was on 12 February 1997.

The programme was given new impetus in 2015 with the arrival of a wild-caught male from Yemen, joined