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CASPIAN SEAL

CASPIAN SEAL (*Phoca caspica*), the only mammal in the Caspian Sea. It is a relict species, endemic to the Caspian Sea and the deltas of rivers that discharge into it—the region where its ancestors lived when the sea was still connected to the oceans (FIGURE 1).

Caspian seal is a medium-size animal with a total length between 140 and 175 cm and a weight of 50 to 95 kg; the males are larger than the females. The coloration depends upon age and varies among individuals. It is usually olive-grey with dark spots, merging into a lighter grey with a touch of yellow on the flanks, and white underneath. The newborn pups are white, tuning dark-grey by the age of two years. With age, the background color becomes progressively lighter and the spots more abundant.

Caspian seals follow a regular annual migration, usually spending the summer in the deeper and cooler southern parts of the sea and migrating to the shallow waters of the northeastern Caspian in the autumn. In early winter, when the waters freeze, female seals give birth in cavities which they excavate on the edge of the pack ice. A female produces one or two pups in February after about eleven months of gestation. The pups are covered with soft white fur in the first two weeks after birth and grow very rapidly. When sensing danger, the mother clasps the pup and seeks safety in the waters of the sea. This is the time when the female seals and their pups are particularly vulnerable to predation, the wolf being their most dangerous predator. White-tailed eagles and other raptors have been observed feeding on the seal's placental remains, and presumably they can attack the pups as well. The

females abandon their pups in a month after parturition, when the period of mating begins. Shortly thereafter, the molt (changing of the fur) takes place. In March, adult seals begin their migration southward, and the pups, by then capable of swimming, form herds and also move to the southern parts of the sea. Owing to this migration pattern, it would appear that most seals found in Iranian waters in the winter are juveniles.

Reports indicate that seals are capable of remaining submerged for about fifteen to twenty minutes. The hind limbs of the seal are positioned beside the tail and are of no use for movement on land, where even the forelimbs are rarely used. Hence, while seals move with speed, grace, and agility in the water, on land they jerk and lurch along in a cumbersome manner, appearing to make out slightly better on ice and snow. They will occasionally rest on remote beaches, basking in the sun.

In the mid- or south-Caspian, the seals feed primarily on the “herrings” of the Caspian Sea, which includes the common kilka (*Clupeonella cultiventris*). These occur in enormous shoals and are caught in great numbers by commercial fishing vessels using the latest techniques. The fishermen regard the seals as being the main cause for the decline in the harvests and, therefore, kill them whenever possible, despite their protected status since the early 1970s. This is an issue which the relevant Iranian authorities are now attempting to neutralize—as, indeed, when the population of the seals was perhaps three times their present number in the mid-1970s, the harvest of the kilka exceeded the present catch by a factor of least four! In the northern parts of the Caspian, the stomach contents of the seals have indicated that mollusks, shellfish, gobies, and sculpins (small black fish) comprise their principle diet.

It is estimated that some two-thirds of the northern ice cover of the Caspian is in Kazakh territorial waters and the remainder in that of the Russian Federation. Kazakhstan does not appear to have any plans for harvesting the seal pups.

Recognition of the perilous status of the Caspian seal was the principle reason for the creation of the Caspian Seal Conservation Network in 1997 as part of the World Bank’s developing Bioresources Network. It was formally adopted with the participation of the five littoral states in 2006. Equally, the Caspian Environment Programme (CEP) was approved at the Tehran Steering Committee meeting of the littoral states in November 2003, with the overall goal—as set forth in the Tehran Convention—of establishing procedures for

the conservation, sustainable development, and management of the Caspian environment. CEP invited the Caspian International Seal Survey (CISS) team to undertake population surveys and carry out related research with the objective of developing a plan for seal conservation. CISS was established "as a collaborative network of international scientists specializing in seal ecology and conservation biology from the UK, Sweden, Estonia, and Russia, working with local partners in the Caspian countries" (CISS).

The seal population faces a number of threats which, briefly, can be summarized as follows:

—Habitat degradation due to marine and boat traffic, various forms of coastal development, disruption of the food chain, impact of invasive species such as *Mnemiopsis leidyi* (a comb jellyfish), and destruction of breeding areas by ice-breaking ships, not to mention the possibility of the shrinking of the ice-cover owing to climatic factors;

—Pollution due to the oil industries, DDT, PCBs and other organochlorine pollutants;

—Natural mortality as a result of predation (as mentioned above), but also due to diseases such as Canine Distemper Virus, and by the agency of humans, such as legal and illegal hunting, as well as deliberate and accidental killing of seals.

The magnitude of the threats listed above has not been studied in sufficient depth, but it is generally agreed that they all appear to be slight when compared to mortality from the harvesting of the pups for their fur and the deliberate killing of adult seals. The seal population of the Caspian has been exploited commercially for over a century. Tens of thousands were harvested each year and "for some years in the mid-20th century the numbers were in the 100s of thousands" (CISS). Clearly, the exploitation of the Caspian seal—indeed, of any species—should be sustainable. In fact, this principle is enshrined in Article 14 of the 2003 Tehran Convention, to which all Caspian littoral states are signatories.

No transparent data with regard to the pup production of the Caspian Seal population has been provided by any of the five littoral states, hence the Caspian International Seal Survey team, together with the Kazakh Fisheries Research and Production Centre (FRPC), initiated a systematic survey of the

breeding seals in the frozen northern parts of the Caspian Sea. CISS used the same methods and the same international team for the Caspian survey, which had been previously used and widely accepted, to investigate the status of the ice-breeding seals in the Baltic Sea in the 1990s and early 2000s.

On the basis of this survey, estimates for the annual Caspian seal pup production were 21,063 in 2005 and 16,905 in 2006. Analysis of the data for 2007 has not been completed, but preliminary figures suggest a significantly lower number than in the previous two years. The total population of Caspian seals in 2005 was calculated on the basis of the above estimate, and an assumption of 50 percent adult female fertility, resulting in about 111,000 seals.

A statistical model based on the figure for both pup production in 2005 and hunting records (CISS states that “until the mid-1960s, both adults and pups were killed”), was used to “hind-cast” the past female population trend. This resulted in a total population of about 250,000 female seals in 1960, and shows a decline of more than 80 percent up to the present. CISS’s conclusion that these figures qualify the Caspian seal for inclusion in the “endangered” category of IUCN’s red list is hence justified. There is, moreover, no doubt that this decline is almost entirely due the over-harvesting of the seal population.

The Russian research institute in Astrakhan (KaspNIRKh—Caspian Research Fisheries Institute) states that according to their estimates, the population is in excess of 350,000 seals. They claim that the figures produced by CISS are based on inferior and inappropriate methodology and are hence wrong. KaspNIRKh has not, however, provided any field data or methodology to show how their estimate was arrived at or calculated. Evidently, it will be up to the CEP and/or the Bioresources Commission to enlist the best specialists available in order to resolve this unfortunate conflict on a strictly scientific basis.

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(Eskandar Firouz)

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