

Resources of the Caspian seal and the means of its rational utilization

by

B. I. Badamshin*

ABSTRACT

The Caspian seal population has been subjected to considerable fluctuations with a tendency of decrease in the number of seals. The main reason for the decrease is overkill. In addition, the fall of the Caspian Sea level has adversely affected the seal and fish population. From 1929 to 1956 the Caspian Sea level has fallen by 2.5 m, while its area has decreased by 30,000 km². In order to maintain the number of Caspian seals at a reasonably high level, rational planning and changes in hunting methods are suggested. Mature seals should be hunted in autumn when they congregate on islands. At that time the seals have the thickest fat layer. Newborn seals should be hunted in winter on ice when their fur has the highest quality.

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For many centuries the Caspian seal appears to have constituted a considerable object of fisheries. Prior to 1803 about 160,000 seals were caught annually. From 1824 to 1867 the average yearly catch amounted to 104,651. In 1844 as many as 290,000 Caspian seals were caught (Sklabinskiy, 1891).

From times of yore the seals were hunted in summer and autumn on the unpopulated islands of the northern and southern Caspian. In the 19th century, especially in its second half, the seals were caught in their breeding and molting grounds on ice. By the end of the 19th century, the island fisheries declined, and at the beginning of the 20th century they ceased to exist. Seal hunting was transferred to the winter. With an increase in the experience of finding young seals and of maneuvering vessels in ice, as well as by improvement of vessels for the purpose, the catches on breeding grounds increased. Although in 1865 the government forbade hunting seals with the aid of sleighs, the annual catches continued to grow due to an increase in the whaling fleet. From 1867 to 1876 the average annual catch amounted to 129,981 seals. In the following decade the maximum catch reached 225,075 seals, but the annual mean value decreased to 117,946 seals. From 1887 to 1896 the average annual catch was 103,130 seals, from 1897 to 1906 – 108,102 seals. These data show that by the end of the 19th century catches tended to decrease. From 1906 to 1915 a slight increase was noted, to 116,126 seals annually. This increase resulted from improvement of methods and vessels used in the hunting of seals. In 1899 the number of whaling vessels was 97, in 1912, 124 (Report by the Astrakhan' Administration, 1901, 1914). In addition, the design of vessels had improved.

The seal fisheries decreased during World War I. But beginning with 1921-1922 the activity revived. The reorganization of fisheries in accordance with Soviet policy gave a new impetus to the development of fisheries, including those of the Caspian seal. New vessels were built, and the old ones were modernized. In addition, aircraft were used to investigate the movements and concentrations of seals. Ice breakers began to lead vessels to the breeding grounds of seals. The hunting of seals with sleighs was legalized. As a result of the combined improvements the seal catches greatly increased, reaching 227,600 in 1935. However, the catches began to decrease soon, reaching 85,991 in 1941. The subsequent decrease was catastrophic.

Such a rapid decrease of seal catches was difficult to understand, the more so because during 1867-1915 the average yearly catch of seals was about 115,000. During World War I and the Revolution the hunting of seals decreased and, as a consequence, the number of seals increased.

During 1929-1956 the conditions of the Caspian Sea were radically changing. The sea level dropped by 2.5 m and its area decreased by 30,000 km². The effect of the changes on marine life was considerable. However, the ice regime of the sea changed little. Therefore, the reproduction of seals continued at the usual rate. Although some of the older coastal islands had become part of land, new islands began to rise and they were used by seals for their concentrations in spring and autumn. Their food, herring and gobies, did not decrease much. Neither did diseases affect them. In contrast to seals of open seas, Caspian seals do not have dangerous enemies that could greatly decrease their number. Therefore, the decrease of seal catches cannot be associated with the above-mentioned factors. Some investigators associate the decrease of catches with a decrease of vessels

used in seal fisheries. This is partly true. Beginning with 1938, the number of vessels was indeed gradually decreasing. However, the methods used in catching seals were improving.

In warm winters, when seals with their young occupy the shore ice or drift ice, they can be readily approached by vessels and hunted. In severe winters, on the other hand, the hunting of seals is difficult.

Although warm winters followed 1935, namely, 1938, 1941, 1944, 1948, yet the mean catch per each vessel was considerably lower than the catches in 1934 and 1935. Fig. 1 shows that the number of caught seals decreased to 1951. Columns denote the number of vessels used each year, the broken line denotes the mean catch. The decrease of catches is undoubtedly associated with decrease in the number of seals. A considerable diminishing of the size of breeding grounds and the density of seals occupying them was noted in 1941 (Badamshin, 1958).

Beginning with 1951, the mean catch per vessel sharply increased. The number of seals observed on islands in spring and autumn increased. In 1958 the area of breeding grounds was considerably greater than in 1941. Evidently, the seal population has begun to increase.

FIG. 1. Number of Vessels Participating in the Winter Fisheries of Caspian Seals and the Number of Seals Caught in Each Year Per Vessel. 1 – undefined vessels; 2 – vessels appertained to seals; 3 – mild winter; 4 – medium-cold winter; 5 – severe winter; 6 – mean catch. Vertical line left: number of seals. Next line to the right: number of vessels.

If the unusual decrease in the number of seals during 1940's cannot be associated with natural factors, such as a fall of sea level, decrease of food, natural mortality, diseases and natural enemies, the intense hunting of seals seems to constitute the main factor because more than 100,000 seals have been caught each year during the past century. The seal population, however, was so large that 117,068 seals could be caught annually from 1901 to 1915 without depletion of its population. It is, therefore, difficult to explain the sudden decrease of seal population during 1933-1940.

By studying the history of Caspian seal fisheries and by analyzing the number of seals caught, as well as their composition, it appears that the changing age groups of catches have contributed to the decrease.

Up to the middle of the 19th century the seals were hunted exclusively on islands where the age groups of both sexes were more or less uniformly represented. As soon as the hunting of seals was transferred to breeding grounds, the situation began to change: the females and young begin to constitute the main catch. By killing large numbers of females and young seals from year to year, the reproduction rate of the animals decreased with each year.

As the breeding grounds began to attract the attention of seal hunters during the last quarter of the 19th century, the seal population diminished. The decrease became more pronounced as the hunting season was shifted to the winter at the beginning of the 20th century. A decrease in the activity of seal hunting during World War I naturally reversed the trend. But it was stopped again. In 1933, until 1940, the seal population became unusually small because about 164,620 seals were killed

each year. From 1925 to 1932 the mean annual catch was 72,375. In subsequent years the maximum catch did not exceed 88,200 seals, the minimum being 23,800 seals.

Thus, the intense hunting of females with young for 8 years (1933-1940) was so damaging to the seal population that their hunting had to be substantially reduced.

Table 1 shows the decline of females from 1933 to 1937.

A. N. Roganov states that in 1935 and 1936 all the offspring of Caspian seals were killed. However, the young seals had not been counted, and the author does not give any data supporting his statement. As a result, his statement is debatable. There is, however, no doubt that the killing of more than 200,000 female seals and almost 550,000 young seals in five successive years was the main factor that contributed to a catastrophic decrease in the Caspian seal population.

After such an intense hunting, a decrease in catches could be expected (Badamshin, 1941).

Intensification of seal catches on breeding ground will undoubtedly adversely affect the recovering seal population. Therefore, in the interest of national economy and the preservation of the seal population, certain restrictions have to be imposed on seal fisheries. If the main objective of seal fisheries is the procurement of fat, the seal should be hunted in season when the fat layer reaches its maximum thickness. If, however, the main objective is the hide, the young seals must be caught on breeding grounds just after their birth.

The fat layer of Caspian seals reaches its maximum thickness in the second half of autumn and the first half of winter. In autumn, seals form large concentrations on small uninhabited islands on the eastern part of the Caspian Sea. Their concentrations remain until the formation of ice, which usually occurs in the first half of November, but in some cases as late as in the first half of December. The concentrations vary from several tens to hundreds and thousands of seals on one island.

The concentrations have a tendency of gradual increase with the approach of winter. At the beginning, the “yellow” or immature individuals appear. But by the second half of October the number of sexually mature individuals begins to increase; later, the fertile females join them. By this time the percentage of sexually mature males increases from 26 to 60, the percentage of mature females varying from 7 to 30. About 65% of the females are fertile.

It appears that by catching seals in the autumn, certain losses to the female population are unavoidable. However, considering that in winter the female population constitutes about 24%, part of which is fertile, the losses to the seal population caused by hunting in autumn would be much smaller in comparison with losses resulting from hunting the seals in winter. In addition, the hunting of seals on islands has certain other advantages.

In autumn the mean weight of seal's fat is 30.1 kg, in winter only 16.1 due to a large percentage of young seals. Consequently, sound regulation of seal hunting may result in the preservation or even in an increase of the Caspian seal population. Such an increase may greatly contribute to a more promising utilization of resources.

From the economic point of view, seal hunting on islands offers the most useful results. First, this method does not require expensive vessels, aerial reconnaissance, patrolling ice breakers, and special instruments. Secondly, the catch per man is greater than by using other, more expensive and less rewarding methods (see Fig. 2). In fact, expenses are reduced two to three times.

Another way of utilizing resources is the hunting of newly born seals, whose hide is of high quality. From a biological point of view, such use of resources is most rewarding. It could be compared to the production of Karakul sheep (Badamshin, 1958). However, man must first learn how to manage resourcefully the seal population.

As of now, many phases in the life of the Caspian seal are unknown to us, as for example the life span, mortality, productivity, age determination, etc. Without accurate determination of age, it is impossible to evaluate the number and age composition of seals in a pod. Moreover, it is impossible to organize expertly the hunting of newly born seals. In contrast to the Greenland seal, the Caspian seal does not form large and dense concentrations. Young Caspian seals form scattered groups over an area of 800-1000 km². Such units consist of single, tens, hundreds, and sometimes thousands of individuals.

The young are usually born on old hummocky ice in the Gur'yevskaya area and in the western half of the northern Caspian. Some young are born as early as in the second ten-day period of January. However, the peak of birth rate is reached in the third ten-day period of the month and at the beginning of February.

FIG. 2. Seals Caught by Each Hunter in One Season. 1 – hunting with vessels; 2 – hunting on islands; 3 – hunting with sleighs. Upper left: centers. Lower left: years.

The pelt of the young is most valuable in the first 5-6 days after birth, when the subcutaneous layer of fat has not yet developed. These seals are known as newborn harp seals. With accumulation of fat, molting begins and the value of the pelt decreases.

Therefore, the hunting of young is successful only in winters when the vessels reach breeding grounds during and just after the maximum numbers of young are born. Most favorable for hunting are mild or moderate winters when the young are born on ice edges or on scattered drift ice. In such winters the seal hunters complete their task in 2-3 weeks. In severe winters or in winters when the concentration of drift ice is considerable, the seals occur on large ice floes, and it is difficult to reach them. As a result, the hunting is less successful. It may, however, happen that sometimes in severe winters, favorable winds bring some of the vessels to shore ice with newly born seals. In such cases, hunting is quite successful. The severe winter of 1942, for example, was favorable for seal hunters. Since the total catch of young seals was limited, the percentage of young with excellent fur was very great. Table 2 shows that the number of young seals with good fur decreases with increase in the hunting time.

TABLE 2. Composition of Seals in Connection With the Length of Hunting Period.

Even if the vessels leave their base simultaneously, not all the vessels reach their hunting grounds at the same time. Far from it. In search of the newborn harp seal, they often come across concentrations of older seals. Therefore, reaching the right locations at the earliest possible time determines, to a large extent, the success of hunters. The most favorable time period for reaching the right location is 20 January to 10 February. However, the character of the winter, and the ice conditions determined by it, are not always favorable for the work.

Practically, tides are not observed in the Caspian Sea. The dynamics of ice is determined only by the force of wind and its direction. In calm weather, it is often difficult to reach the newborn harp seals due to unbroken ice. Much time may be required to reach the needed locations. Sometimes, even in mild winters, weather conditions may aggravate the movement of vessels. Thus, in the winter of 1955, the seal hunters left their base on 30 January and successfully returned on 14-15 February. Later, from 20 February to the beginning of March, they returned to the breeding grounds. Although the first fleet reached the breeding grounds at the right time, the percentage of newborn seals constituted only 19.4%.

TABLE 3. Composition of Seal Catch in 1955.

In the Gur'yevskaya region, accessibility to the breeding grounds is always difficult due to a drop in sea level and shoaling water. Therefore, the area cannot be recommended for seal hunting with vessels.

Prior to 1939 the hunting of newborn seals was done successfully with the aid of sleighs. When we do not have better methods, the use of sleighs can, in certain cases, be made profitable. The hide could be rapidly transported by aircraft or helicopters. However, certain inconveniences may be imposed by weather conditions.

In warm winters, when the ice edge intersects the Gur'yevskaya shoal, or when seals are on drifting ice, the operation of sleighs is always associated with dangers. Even a light wind or current can bring the hunters out to the open sea where the ice is subject to disintegration. A similar situation may arise on shore ice, especially in the western half of the north Caspian where the ice is not dependable.

Hence neither sleighs nor vessels can be considered as the best means of reaching newborn seals. If hunting were limited to newborn seals, a considerable increase (1-1/2 to 2 times) in seal population would occur in the following 5-10 years. Part of the seals would, with age, lose their sexual ability and die out. Such a situation is, however, unsound from an economic point of view. The old seals would continue to use food resources and compete with other seals without yielding any profit to our national economy.

On the basis of this discussion, it appears that the limitation of seal hunting to newborn seals is not justifiable. Similarly, the present method of hunting of seals in winter is not justifiable because large quantities of mature females are destroyed, and therefore the quantity of the seal population is reduced. The seals hunted in autumn yield large quantities of fat, but the much-needed fur of

newborn seals cannot be obtained. As a consequence, two hunting seasons are needed, the autumn season for fat and winter season for newborn seals.

The present level of the Caspian seal population seems to allow the hunting of 20,000 newborn and 30,000 mature seals congregating on islands in the autumn. Considering that the seal population is growing, the number of seals killed each year could gradually be increased by improving the methods of hunting.

The hunting of seals on islands depends a great deal on hydrometeorological factors. Therefore, hunting is usually launched after favorable northeasterly and easterly winds, when the islands become more exposed and the seals are farther away from the water's edge. There is, however, one disadvantage: the easterly winds are not always associated with the presence of seals. During the 50-60 day hunting season, the desired winds will coincide with the presence of seals on the islands only 2-3 times. While waiting for favorable winds, the vessels and men are kept idle. This is the major disadvantage of hunting seals in the autumn.

The techniques of hunting seals on islands should be substantially changed so that the hunting could go on with favorable or without favorable winds. The seal concentrations can be surrounded by special seines that would appear on the surface after the seals have congregated on the islands. Electric current could be utilized for catching seals. It is also possible to paralyze the animal's vision for a while by artificial light so as to enable hunters to surround the concentration. Lastly, the seals can be induced to approach a desired place with sounds recorded on magnetic tape. In this case the hunters could select islands that are well-suited for hunting.

The fall of the Caspian Sea has exposed many shoals that are now used by seals. These new islands have not yet been charted, and therefore they mislead hunters when looking for seal islands. Sometimes the work is hampered and vessels are grounded on shoals. The situation is especially unpleasant shortly before the appearance of ice.

The seal islands should be accurately charted and marked with clearly visible signs. In addition, detailed depth charts should be prepared for the locations.

We believe that the improvement of hunting techniques is possible and that it will contribute greatly to increasing the catches, and decreasing the manpower and cost.