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Phoca sibirica.

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Phoca sibirica Gmelin, 1788

Baikal Seal

Phoca vitulina (var.) *sibirica* Gmelin, 1788:64 (type locality Lake Baikal).
Phoca baicalensis Dybowskii, 1873:109 (also spelled *baikalensis*).
Phoca (*Pusa*) *sibirica* Allen, 1880:464 (first use of this name combination).
Phoca oronensis Dybowskii, 1929 (type locality Lake Oron, but according to Ognev, 1935, there is no seal in this lake).

CONTEXT AND CONTENT. Order Pinnipedia, Family Phocidae, Subfamily Phocinae, Tribe Phocini. The genus *Phoca* has seven extant species. The subgenus *Pusa* has three extant species: *P. sibirica*, the Baikal seal (Fig. 1); *P. caspica*, the caspian seal; and *P. hispida*, the ringed seal. No subspecies of *Phoca* (*Pusa*) *sibirica* are recognized. Type specimen none.

DIAGNOSIS. *Phoca sibirica* was distinguished by Scheffer (1958) from other members of the subgenus *Pusa* by its relict distribution in Lake Baikal, unspotted (or rarely spotted) pelage, and fish-eating habit.

Diagnostic skull characteristics (Ognev, 1935) of the Baikal seal are (Fig. 2a, b): skull is thin walled; zygomatic arch is wide (103 to 116 mm), usually more than half of the condylobasal length; posterior palatine foramina usually enters the palate posterior to the maxillopalatine suture; interorbital width is less than 7 mm; there is no sagittal crest; and shape of the face is more cat-like than in other phocids. In addition (Gromov et al., 1963), reported that the anterior edges of the nasals bear two lateral osseous protrusions, but no central process; condylobasal length ranges from 170 to 205 mm with an average length of 180 mm; tympanic bulla is small; and the posterior edge of the palate has varying shapes, most commonly U-shaped, sometimes V-shaped, and infrequently oval.

Dental characteristics reflect the fish diet of the Baikal seal (Fig. 2c, d). The length of the second upper postcanine tooth usually is less than 6.8 mm; mandibular teeth always are aligned with the dorsal margin of the jaw behind the toothrow, never crowded in adults; upper postcanines usually have 3 cusps (center one tallest); additional cusps (as many as six) are common in lower postcanines; and inner side of the mandible between middle postcanines is concave (Scheffer, 1958). Gromov et al. (1963) reported that, unlike those of the ringed and Caspian seals, the lower premolars and molar of Baikal seals were better aligned so that the crowns fit together "like a comb" (Fig. 3).

The forelimbs and foreclaws of *Phoca sibirica* are larger and stronger than those of *P. hispida* or *P. caspica* (Kondakov, 1960). The foreclaws of the Baikal seal are triangular in cross-section, with a distinct dorsal ridge distally and annuli. These distinctive forelimb characteristics may have evolved for making and maintaining access holes, grasping their prey, or moving on the hard ice substrate.

Yablokov (1974, Fig. 28) compared variability in several anatomical structures within the subgenus *Pusa* in an attempt to determine differences between Baikal, ringed, and Caspian seals. Body measurements, number of tracheal rings, number of caudal vertebrae, number of vibrissae, and length of the digestive tract were examined, but only the shorter total body measurement of *Phoca sibirica* showed significant differences from the other two species. These results were in conflict with the conclusion of Gromov et al. (1963) that there was no difference in the total body length between *P. sibirica*, *P. hispida*, and *P. caspica*.

GENERAL CHARACTERS. Baikal seals are among the smaller pinnipeds and the only pinniped limited to freshwater (Bobrinskiy, 1944; Smirnov, 1929). Their fur is dense, unspotted, blackish-gray at the base, and yellowish-silver at the hair tips (Gromov et al., 1963). Adults generally are silver-gray on the back and yellowish-white on the belly (Dybowskii, 1873). The lanugo is whitish for cryptic coloration against an ice habitat during the pre-weaning age (Pastukhov, 1976). Newly molted pups are silvery-gray; the yellowish tinge on the belly is obtained by year 2 (Ognev, 1935). Kozhov (1947) reported a maximum adult body length of 1.65 m (nose-to-hind flipper), whereas Pastukhov (1976) reported that nose-to-tail length (standard length) ranged from 1.10 to 1.42 m. Adult weights range from 50 to 130 kg (Kozhov, 1947). Annual spring weight loss results in adult weights as little as 65 kg (Gromov et al., 1963). Barren females obtain the maximum adult weight, one individual having 96 kg of blubber alone (Ognev, 1935). Newborns weigh 3.0 to 3.5 kg and are about 70 cm in length (Gromov et al., 1963).

DISTRIBUTION. Most Baikal seals are confined to the 675 km length of Lake Baikal in the Soviet Union (51°43′ to 55°46′N and 103°44′ to 109°37′E) occasionally, a few occur in rivers flowing into the lake (Swain, 1980). One sighting was made at the Irkutsk Dam, 400 km down the Angara River (Pastukhov, 1976), which is the only river flowing out of the lake (Fig. 4).

FOSSIL RECORD. The fossil record of Baikal seal ancestors virtually is non-existent in the area of the lake (Alekseev, 1924); yet the zoogeography of the Baikal and Caspian seals has attracted more attention than that of all other pinniped species combined (Chapskii, 1955*b*). Several authorities have discussed the theories on the evolution of the two species (Berg, 1910; Bogachov, 1927; Kozhov, 1947; Ognev, 1935). Present evidence suggests two possibilities (Gromov et al., 1963). Evidently, about 10 to 12 million years ago phocines entered the Paratethyan Basin, lying in the region of Southeast Europe and extending into present-day Russia. Ray (1976) and, more recently, Repenning et al. (1979) concluded that *Pusa* gained access to the Arctic Ocean from Paratethys about 2.5 to 3 million years ago, when the Arctic Ocean extended well below 61° north latitude and presumably contained only moderate amounts of ice. The Baikal seal, according to this hypothesis, would have been pushed southward from the Arctic Ocean by the advancing Pleistocene glaciation and then would have migrated up the Yenisey River toward Lake Baikal about one-half million years ago. An older and alternate theory is that the Baikal, Caspian, and ringed seals evolved earlier in the Late Tertiary from a common ringed seal-like ancestor in the Paratethys, and then moved northward through rivers and lakes formed during glaciations to settle in Lake Baikal (Chapskii, 1955*a*; Davies, 1958; McLaren, 1960).

FIGURE 1. Baikal seal pup (*Phoca sibirica*) at four months of age.

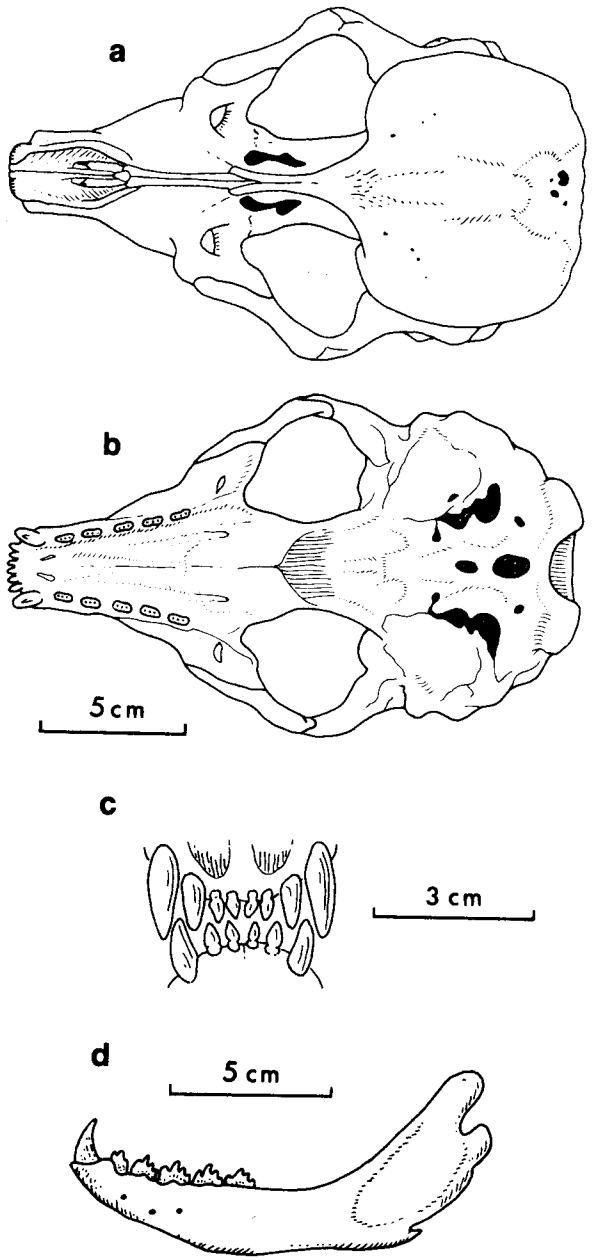

FIGURE 2. Drawings of the skull of *Phoca sibirica*: a, dorsal view; b, ventral view; c, inner buccal view of upper and lower incisors and canines; d, lateral view of lower jaw.

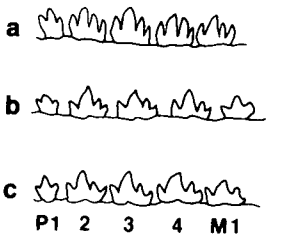

FIGURE 3. Comparisons of the lower premolars and molar of the seals within the subgenus *Pusa*: a, *P. sibirica* (Baikal seal); b, *P. cuspica* (Caspain seal); c, *P. hispida* (ringed seal).

The taxonomy of nematodes (Mozgovoy and Ryzhikov, 1950) and lice (Ass, 1935) of Baikal, Caspian, and ringed seals provides substantial evidence for the evolutionary history of the Baikal seal. These studies found subspecies of a nematode and a louse of ringed seals that are also common in Baikal seals. Both studies support the theory that Baikal seals originated from *P. hispida*, rather than *P. caspica*.

FORM AND FUNCTION. The pelage of Baikal seals is black and coarse, with silvery hair tips pointing directly backward. Bel'kovich (1964) divided the hairs into three categories: large, long guard-hairs that have no medulla; flat, intermediate-length hairs; and short, thin, twisted downy-hairs. The long guard-hairs overlie the intermediate and downy-hairs to trap an insulating air layer, helping to conserve heat. The hair cover decreases hydrodynamic resistance more than does the rough skin surface (Mordvinov and Kurbatov, 1972; Romanenko et al., 1973).

Characteristics of the integument were discussed extensively by Bel'kovich (1964). Integumentary derivatives, such as claws and vibrissae, show unique configurations. The mystacial vibrissae are numerous (45 to 55 pairs) and are beaded. Five prominent vibrissae occur above each eye. The foreclaws are black, prominent, triangular in cross-section, and exhibit annuli, whereas the hindclaws are smaller and less robust (Pastukhov, 1976).

Two pectoral mammae are present. The composition of the milk has not been examined. The lactation period is long compared to that of other seals (Gromov et al., 1963), sometimes lasting over 3 months. The dental formula is: i 3/2, c 1/1, p 2/2, m 3/3, total 34. The double-rooted first upper premolar is unusual in seals. In addition, some specimens exhibit a triple root in the last premolar. Milk teeth are shed in utero and permanent teeth are partly erupted at birth.

Pastukhov (1969*a*) found that the skull of the Baikal seal is relatively larger than that of other species in the subgenus *Pusa*. Sexual differences in skull characteristics, with males being significantly larger, were reported by Pastukhov (1969*a*) and Timoshenko (1975). Pastukhov also reported that the skull was more similar to that of the Caspian seal than the ringed seal. In contrast, Chapskii (1955*a*) found twice as many osteological features allying the Baikal seal with the ringed seal than with the Caspian seal. Shared skull characteristics with the ringed seal were the shape of bones in the auditory canal, the profile of the rostral part of the skull, and the non-fused double roots of the first upper premolar. Shared skull characteristics with the Caspian seal included smaller osseous cells, lesser indentation of nasal bones into the frontal bones, greater extension of the nasal process of the intermaxillary bones along the nasal bones, and larger dimensions of the skull case (Chapskii, 1955*a*).

According to Chapskii (1955*a*), the Baikal seal has evolved several skeletal adaptations associated with searching for mobile prey. Baikal seals have enlarged eyes, a widened zygomatic arch, and a contraction of the interorbital space. The muzzle is lengthened, the ossified nasal opening enlarged, and the middle protuberance of the anterior rim of the nasal bones reduced. The anterior area of the intermaxillary bone is positioned more forward and is lengthened, apparently associated with strengthening the sphincters of the nostril. The teeth are enlarged, especially in the lower jaw, and the crests of the premolars and molars are convergent and tilted towards the principal crown.

Yablokov (1974) reported the mean number and standard deviation of ribs (asternal = 5.6 ± 0.66 and sternal = 0.0) and of caudal vertebrae (13.0 ± 0.09). The trachea is composed of circular rings of cartilage, apparently not collapsible as in some phocids. The mean and standard deviation for the number of tracheal rings is 78.7 ± 0.55, a value similar to that of ringed seals. Dybowskii (1929), Ivanov (1938), and Zheglov (1972) discussed other aspects of the structure of the skeleton of Baikal seals.

Circulatory morphology conforms to the characteristic pattern of phocids. Prominent, bulbous enlargements of the ascending aorta and pulmonary artery originate as these vessels join the left and right ventricles, respectively. Apparently, the elastic recoil of these structures can provide energy and volume for maintained blood perfusion throughout long diastolic intervals during dives (Rhode et al., 1977) and thereby contribute to reduction of cardiac work during dives. The right ventricle is slightly more prominent than in most mammals and has a rounded rather than pointed apex, similar to that of *Phoca vitulina*, *P. largha*, and *Leptonychotes weddelli*. The inferior vena cava is bifurcated distally and enlarged with connections to renal plexi and hepatic sinuses. In these respects, its structure resembles that of other phocids, but its volume seems much smaller.

Diving bradycardia, not notably different from that of other phocids, is readily demonstrable. Based on the small size of *P.*

sibirica, and its similarity in organ dimensions (especially brain size) and vascular volume to other small phocid seals, its maximum diving time would be estimated not to exceed 20 to 25 minutes. However, Pastukhov (1969*b*) reported that newly captured Baikal seals remained frightened and immersed in a tank for two to three times this predicted duration. Reasons for the discrepancy are not known.

Life in freshwater might lead to alterations in renal function compared with other phocids, but recent experiments on *P. sibirica* and *P. hispida* showed no substantial differences in handling salt or fresh water loads (Hong, Elsner, and Ronald, pers. observ.).

ONTOGENY AND REPRODUCTION. Eighty-eight percent of adult females produce pups each spring (Pastukhov, 1975*a*). Pupping occurs on the ice from mid-February through March, with the peak in mid-March (Pastukhov, 1975*a*). The sex ratio at birth is about 55% females to 45% males. A rather high rate of twinning (4% of annual births) is exhibited compared to other seals (Pastukhov, 1968*a*, 1968*b*). Twins are smaller than singly born pups and often remain together on ice floes after weaning. Mating is believed to occur under water in March, at about the time mothers wean their pups (Pastukhov, 1975*b*). Delayed implantation occurs, and the actual gestation period is about 9 months (Kozhov, 1947). According to Ognev (1935), mid-August embryos ranged from 70 to 130 mm in length, and by 10 September, embryos were 226 mm. At birth, pups weigh from 1.5 to 4.5 kg, and grow at the rapid rate of about 1.0 kg per day. The lactation period was reported by Kozhov (1947) as 1.5 to 2.0 months, by Popov (pers. comm.) as 2.0 to 2.5 months, and by King (1965) as 3.0 months. The young are born with white fetal pelage that persists for 4 to 6 weeks (Gromov et al., 1963). According to Popov (pers. comm.), the white lanugo is molted over a two week period at 1.5 to 2.0 months of age, while the pup is in the birthing lair. Subsequent to weaning, pups join other seals to form spring colonies.

The earliest age of sexual maturity known for female Baikal seals is 4 years; some females breed at 5 years, and most breed by 6 years (Pastukhov, 1969*c*). Most males breed by age 7. Aging techniques using claw annuli (for seals less than 4 years of age) and canine tooth annuli (for seals more than 4 years of age) showed that about 10% of the population was older than 20 years (Pastukhov, 1969*e*). Pastukhov (1969*c*) reported a seal that was 56 years of age based on teeth annuli. Females breed until about 30 years of age.

Adult Baikal seals start molting during a 2 week period beginning May 20. Duration of adult molt is variable, and may extend from mid-May into July (Pastukhov, 1978*a*). Pastukhov (1976) noted that seals spend significant amounts of time (20 to 30 days) hauled-out on the ice prior to molting, which may be important in determining the onset of molt. Perhaps for thermal regulation, molting seals spend more time hauled-out on the ice than do non-molting seals.

ECOLOGY. The seasonal movements of seals within the lake are determined by ice conditions rather than by availability of food (Pastukhov, 1978*a*). During the Siberian winter, Lake Baikal is covered with ice that averages 80 to 90 cm in thickness, with a maximum of 1.5 m. In winter, seals are sighted throughout the lake adjacent to breathing and haulout holes in the ice. Immature seals generally utilize one hole, whereas adult males have one primary hole surrounded by as many as ten auxiliary holes. A mother and pup occupy one central hole with five to seven auxiliary holes. Barren females, juveniles, and adult males are solitary, but may share haulout holes. In early spring, pregnant females seek sheltered birthing lairs in ice hummocks near a haulout hole (Pastukhov, 1975*b*).

Fifty-two percent of pups are born in the northern part of Lake Baikal, 31% in the middle, and 17% in the southern region produce pups (Popov, pers. comm.). Around the first of April, seals form large concentrations according to sex and age class (Pastukhov, 1975*b*). These concentrate along polynyas to feed, especially at Ushkani and upper Svyatoi Nos Islands (Scheffer, 1958). One-, two-, and three-year-olds first congregate along leads in the ice, and are later followed by adult males. Pups join the rookery in mid-April followed by non-parous females, and later by mothers of that year. In May, the seals follow the northward ice breakup along the lake and frequent the northern areas of Aiaia and Froliha (Ognev, 1935). In summer, seals congregate along the southeastern coast of the lake (Kozhov, 1947) and haul out either in onshore rookeries (Ognev, 1935) or on offshore rocks (Scheffer, 1958). As fall approaches and ice starts to form in the shallow

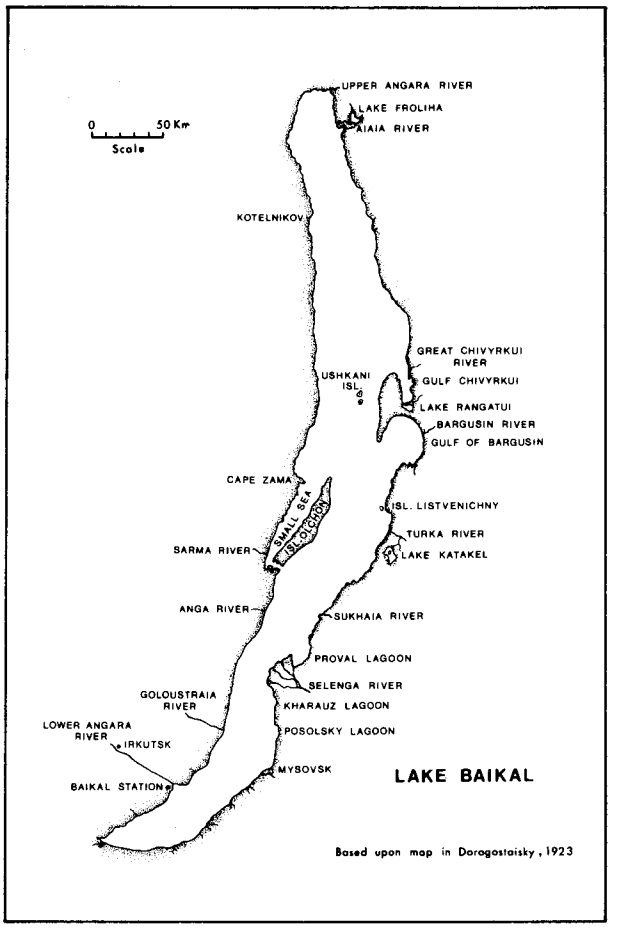

FIGURE 4. Map of Lake Baikal showing locations of *Phoca sibirica*.

bays on the east side of the lake, especially Chivyrkui Gulf and Proval Lagoon, they move to these areas (Pastukhov, 1961). As ice becomes more widespread, seals disperse throughout the lake adjacent to holes necessary for their winter survival. There has been a recent decrease in the number of seals in the southern part of the lake throughout the year, presumably due to increased human habitation (Kozhov, 1947; Pastukhov, 1967*b*, 1978*a*).

Aside from occasional attacks by bears (*Ursus arctos*), Baikal seals have no predators except man (Pastukhov, 1976). No other marine mammals or large carnivores in or near Lake Baikal provide significant competition for food, living space, or other resources. According to Pastukhov (1966, 1977) and Pastukhov et al. (1969*d*), Baikal seals consume several species of fish that are not of commercial value to man. Among these are the greater golomyanka (*Comephorus baicalensis*), the lesser golomyanka (*C. dybowskii*), the Baikal yellowfin sculpin (*Cottocomephorus grewingki*), and the longfin sculpin (*C. comephoroides*) (Ivanov, 1936). Most foraging is done at twilight and at night. Swain (1980) reported that golomyanka migrate to depths of 20 to 180 m at night and return to the surface during the day. In captivity, an adult Baikal seal consumed up to 5.6 kg of fish per day (Pastukhov et al., 1969*b*). Seals potentially can eat all types of fish in the lake except a large sturgeon (*Acipenser baeri*). During the summer, stomach contents have yielded otoliths of 17 different species of fishes, but consist primarily of the four species listed above; they also contained several species of invertebrates (Pastukhov, 1976). In the fall, the diet was less variable, and only about 8 species of fish were found in their stomachs. During the winter the diet was restricted to the two sculpins and the two golomyanka (Pastukhov, 1966). Younger seals may have relied more on invertebrates (Pastukhov, 1976). They also ate the same species of fish as the adults, but of smaller size classes. The Baikal seal does not significantly affect omul (*Coregonus autumnalis*), the commercially valuable fish in Lake Baikal (Gromov et al., 1963; Gurova and Pastukhov, 1974).

The Baikal seal has two common parasites, a louse (*Echin-*

ophthirius horridus baicalensis) and a nematode (*Contracaecum osculatum baicalensis*). Lice commonly occur over the eyes, under the chin, and under the foreflippers. Nematodes infest the stomach and intestine.

Primarily because of the requirements of regulated harvest, the population dynamics of *Phoca sibirica* have been studied intensively by scientists at the Limnological Institute on Lake Baikal, USSR (Pastukhov, 1965). Pastukhov (1965) found that 40% of the adult population were males, 50% were pregnant females, and 10% were non-parous females. Age, sex, and reproductive composition of the population have been determined through examination of specimens taken from the annual hunts. Annuli of claws and canine teeth were used to age seals. Aging techniques using teeth were documented by Klevezal' (1961). Reproductive data were grouped by age, giving age-specific reproductive activity.

Pastukhov (1969*e*, 1976) discussed previous population estimates of the Baikal seal. In a 1953 aerial survey, 20,000 to 25,000 seals were estimated. In 1967, better census techniques yielded an estimate of 35,000 to 40,000 seals. Pastukhov (1978*b*) conducted spring surveys from April through May in 1976 and 1980 using motorcycles on a system of gridded transects throughout the lake. During these surveys the number of haulout holes, ice type, and lair condition were recorded. The population from 1971 to 1978 was estimated to be between 68,000 and 70,000 seals (Pastukhov, 1978*b*).

The methods for hunting Baikal seals and the levels of the harvest have changed over time (Pastukhov, 1976). Some early hunters covered auxiliary breathing holes during winter and clubbed seals at the main hole. However, adults were difficult to catch using this technique. A variety of vehicles have been used during the spring to approach the seals on the ice, including boats, horse-drawn sleighs, and motorcycles. Currently, the hunter's approach is concealed behind a white blind, and hunters are camouflaged in white dress. Seals are shot on the ice at about 100 m. During the fall, hunters take advantage of concentrations in freshly frozen bays, setting nets around these sites and along some of their primary corridors of movement. The number of seals taken annually has varied: before 1917 about 2,000 to 9,000; in 1930 about 6,000; and currently between 5,000 and 6,000 (Pastukhov, 1976, 1978*a*).

At present, there are three major hunting seasons (Pastukhov, 1971*a*). An early spring hunt in April results in the collection of about 2,000 to 3,000 seals, mostly pups, and depends on approaching seals hauled out on the fast ice. A late spring hunt for 1,500 to 2,000 seals is conducted from late May through June in northern ice. Molted pups, sexually immature molting seals, and adult seals are taken. Twins remain together on the ice subsequent to weaning and often both are collected because of their reluctance to separate. A fall hunt is conducted in October and November, during which about 1,000 seals (both adults and young of the year) are taken by netting, especially in Chivyrkui Gulf and Proval Lagoon.

Seals are harvested primarily for their pelts, blubber, and meat (Pastukhov, 1967*a*). Pelts of pups are used to make hats and coats, and skins of adults are made into boots. Bones, fat, organs, and meat are used for food at nearby fur farms (Pastukhov, 1976). Humans eat some meat and organs taken during the annual hunt, but seal meat is not a major subsistence product.

Baikal seals seem to adapt readily to captivity and have been maintained successfully at zoos in Moscow, USSR; London, England; Berlin, West Germany; Guelph, Ontario, Canada; and San Diego, San Francisco, New York, and St. Louis, USA. Pastukhov (1969*b*, 1971*b*) conducted several studies on feeding behavior of Baikal seals in captivity at the Limnological Institute near Lake Baikal and successfully housed both pups and adults.

BEHAVIOR. Little is known about the intraspecific interactions of Baikal seals. Mother/pup interactions are limited to a possible 2- to 3-month period prior to weaning. Mothers do not rescue pups that are approached by humans, but instead call to them from a haulout hole with a "cow-like" sound (Pastukhov, pers. comm.). White pups are first seen outside the birthing lair in the beginning of April (Pastukhov, 1976). Occasionally, abandoned pups are seen away from the lair, and bite marks have been noticed on these pups, suggesting parental herding. Pastukhov (pers. comm.) observed an adult male push a pup out of a birthing lair near the time of mating. Ognev (1935) reported that mating occurred in mid-summer. However, it is currently believed that underwater mating occurs near the birthing lair at the termination of lactation (Gromov et al., 1963). The mating system is assumed to be polygamous, with little or no pair bonding. It is not known if adult males are territorial, but the absence of bites, scars, and wounds indicates that inter-male disputes during the mating season do not occur.

After mating, seals congregate in groups of 200 to 500 to bask in the sun and to feed (Popov, pers. comm.). Although the haulout pattern is influenced by weather, most seals haul out in the winter between 1300 and 1700 h. The haulout pattern of seals in summertime rookeries shows two peaks at 1100 and 1800 h. Presumably at other hours most seals are feeding in the water (Pastukhov, 1976).

Sensory adaptations have not been studied specifically in the Baikal seal. Because *Phoca sibirica* has slightly larger eyes than its ancestors, Chapskii (1955*a*) postulated that enhanced vision evolved as an adaptation to finding access holes in the ice, either during the darkness of the Siberian winter or from the great depths of the lake. Petrov (pers. observ.) observed these seals in captivity and postulated that the vibrissae are used to detect pressure pulses from swimming fish. In captivity, pups commonly emitted a whining sound, a teeth-chattering sound, and a slap of the foreflipper that was repeated from 2 to 30 times per series (Thomas, pers. observ.). Vocalizations have been heard from lairs, presumably related to mother/pup interactions; however, no underwater sounds have been documented in the wild. The external ear opening is prominent, but hearing abilities are unknown.

Phoca sibirica is a graceful, coordinated swimmer. Baikal seals tread water in a vertical position while peering at the surrounding environment. In captivity, pups interact playfully, chasing and pawing. We observed a male pup hold his female companion underwater in a position imitating that of copulation.

There are controversial opinions about the behaviors associated with maintenance of access holes in the ice. Ivanov (1938) reported that seals use teeth, foreflippers, and even rearflippers to break ice in their holes. Gromov et al. (1963), however, stated that Baikal seals use their heads and strong foreclaws for breaking hard, freshwater ice.

GENETICS. The karyotype of the Baikal seal was studied by Anbinder (1971) and compared with the chromosomal complement of other phocids in an attempt to explain the evolutionary relationships between these seals. The karyogram of the Baikal seal was similar to those of the Caspian seal and ringed seal. There are 32 chromosomes with 62 autosomal arms. Chromosomes can be divided into six groups: two pairs of large metacentric autosomes (1 pair in the Caspian seal); two pairs of large submetracentrics; six pairs of medium-sized metacentrics (5 pairs in the Caspian seal); two pairs of submetracentrics; a single pair of acrocentrics; and four minute biarmed pairs (metacentric and submetacentric). The karyotypes of phocids exhibit a phylogenetic constancy in number and in form of chromosomes.

Suderman et al. (1978) compared the hemoglobin composition of *Phoca vitulina*, *P. hispida*, and *P. sibirica* using electrophoretic and chromatographic techniques. The alpha-hemoglobin chain components were similar among these species, but the beta-hemoglobin chain differed in 15 positions. Six alpha-chain and one beta-chain substitutions had not been reported before in other animals.

REMARKS. Lake Baikal is unique in faunal and geological history. It is the oldest and deepest lake in the world (1620 m at the deepest point) and contains a volume of water similar to that of the Great Lakes combined (Swain, 1980). Brooks (1950) discussed the fauna of Lake Baikal and described its uniqueness based on the high number of endemic species, the small number of phyla dominated by nonendemic species, and the absence of many common freshwater animals.

The name *sibirica* reflects this seal's limited distribution in Lake Baikal, Siberia, USSR. Several Russian common names are used to describe *Phoca sibirica*: "tylenne," "khap," "kuma," "argal" or old male, "chernysh" or 2-year old seal, "nerpa" or ringed seal, and "belek" or newborn.

Skeletal material is deposited at the Smithsonian Institution.

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