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The reproductive ability of pacific walrus population.

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The Report is based on the material collected by TINRO research expeditions in 1972 and 1973 from the end of June ti the beginning of September in the Chukotka Sea.

382 walruses were obtained without selection on rookeries of pups among them 213 females in the age from 3 to 27 years.

The age determination is made by horizontal teeth edges.

The treatment of ovaries was mainly performed by macroscopic method but for some of those were prepared histological compounds.

While treating the ovaries the most complicated point was the differentiation of Corpusalbicans as remnants of former pregnancies from Corpusalbicans remaining after [atr sia] of follicle. The comparative analysis showed that Corpusalbicans after [atresia] of follicle is rapidly diminishing, pushed deep inside the ovary and disappeares in 1 or 2 years. Corpusalbicans related to former pregnancy remains for years, its size is also gradually shrinking but it does not disappear completely and opposite to Corpusalbicans of reborn follicle is always situated at the surface of the ovary. The walrus female matures from the age of 2 - 3 years (Popov, 1960, Freiman, 1941, Nikulin, 1941, Krylov, 1962), at the age of 4 - 5 years (Chapsky, 1936, Belopolsky, 1939, Brooks, 1954, Fay, 1955)

and is getting productive not before the age of 6 years (Krylov, 1962). J.Burns (1965) established that the first pregnancy occurs at the age between 5 and 10 years.

The results of investigations confirmed that the period when comes the maturity of a female from 4 to 8 years, and start sexual reproduction as a rule, one year later, and as an exception at the year becoming mature.

At the age of 4 pregnancies were found by 17% of females.

At the age of 5	"	by 55%
At the age of 6 - 7	"	by 90%
At the age of 8	"	by 92%
At the age of 9	"	by100%

The females after pubescence and becoming reproductive till the end of their life reproduce less regularly, which is reflected in the increase of pregnancies with age per one female in average. The advance of climateric period is not observed. In the genitals of females were registered pathological changes: the formation cartilaginous capsulas in the allocation of large follicles; the growth tissue-connecting swellings on ovaries; degeneration of cork tissue of the ovary into the connecting; salt deposit in the horn of the womb, resulting in the loss of elasticity of the womb. These phenomena were registered by the animals at the ages 9 to 24 years. Partly this contributed to make a female barren, in other cases she continued to participate in the reproduction. The second reason for barrenness could be considered the recorption of corpusluteum of the actual

pregnancy, as a result of unsuccessful implantation of blastocist.

Out of 213 females in the probe, 201 proved mature. By quantity of corpusalbicans residual from former pregnancies and corpuslactation, found in the ovaries, we have calculated the number of pregnancies completed by the given moment. The number was 659 i.e. 3,28 per each mature female. Having added 87 pregnancies which occurred this season, we have received the total number of pregnancies 746 or 3,71 per a mature female. J.Burns (1965) found 3,22 pregnancie per one female. Taking the age os 6 years as an agreed upon age of the first pregnancy, we obtain the number of reproductive years for every age and for the whole probe. The result was the following: 201 mature females brought forth 659 pups during 1384 reproductive years, in average 1 pup in 2,1 years. J.Burns (1965) - 1 pup in 2,3 years; S.Garbo (1961) - in 2,4 years. There are various opinions as to periods of whelping of walruses : K.Chapsky (1936), C.Freiman (1941) and A.Mansfield (1959) came to the conclusion that females can bring pups once in two years, but A.Mansfield added that the older species whelp once in three years. V.Krylov (1962) brings about a complex sycle of reproduction: 4,5% whelp annually, 12,3% - every second year, 42,2% - once in three years, in average every year whelp 35% of mature females. The Burns' data state that annually whelp 46,2 of mature females.

In our probe 87 females (43,3%) started to reproduce in the given season. Among them 10 species (5%) became pregnant the second season running and the major part of

lactic females - 91 (45,3%) did not reproduce. The balance of 11,4% contained barren females and species whelping less than once in 2 years. Apparently these figures can not be taken as constant. They fluctuate from year to year in small margins, which is influenced by the complex rhythm of reproduction of females.

The size of litter, determined previously, fluctuates frc 6,3% (Krylov, 1962) up to 17% (Freiman, 1941). In our probe the age structure of killing females does not reflect the year class composition in the stock.

We have built the left part of the curve, taking as a basis the minimum values, characteristic of ice types of seals. The mortality data were for 2 - 8 years, were decreased by 25% as the pup mortality of walrus is 25% 'Fay, 1955), significantly lower than that of seals (35 - 40%). (Fedoseev, 1974), Using data related to the advance of maturity by females we have determinated that the matured part of the population constitutes 60%.

The sex proportion in the stock is 1:1 and the females percentage is 30. As annually reproduce only 43,3% the increase will make up 13% (Brooks, 1963 - 13%, Burns, 1965 - 14%).

At present the size of pacific walrus population equals to 100 - 117000 (Burns, 1967, Goltzev, 1972). The annual pup litter 13 - 15000. Quite possible that 15 years ago when the stock was in depressed condition (Fedoseev, 1962), immature part was relatively smaller than 30-35% and litter could be 15 - 16%.

In the years to come, as the stock will be growing, the

rate of litter can insignificantly change with tendency to decrease at the expense of longer life and accordingly the number of year- classes in the population.