

SUMMARY

The material is based on the fish markings carried out in the years 1968 - 71 in the sea area facing Helsinki. Altogether 7226 pike-perches, pikes, breams, carps and tenches were marked.

The mark returns notified in the fixed time included 151 pike-perches (7,3 % of the total number), 81 pikes (7,5 %), 42 breams (2,2 %), 363 carps (25,0 %) and 83 tenches (15,1 %).

The general circulation area of pike-perches in the area facing Helsinki extends eastward to the area facing Porvoo, westward to the level of Bodö-Miessaari, and to the south up to the line Ramsö-Katajaluoto-Eestiluoto. The most distant mark findings have been made in Karuna, Hanko, Kotka, Vehkalahti and Loviisa.

83,3 % of the pike-perches were found at a distance less than 10 kilometres from the marking place and 90,1 % at a distance of less than 20 kilometres. On the average, the pike-perches marked in Espoonlahti migrated longest. The length of the journey is not dependent on the size of the fish.

The pike-perches of the area facing Helsinki have a rather distinct migration rhythm according to seasons against as well as in the direction of the coastline. After spawning, the pike-perches stay in inlets but commence moving outward in August. In September-October the pike-perches migrate to their winter areas in the most outlying island areas from where they return in spring in April-May to spawn in inlets. The migrations in the direction of the coastline take place similarly as to their time.

The pike-perches have been observed to have three sorts of migration. In the spawning migration they move from the outlying island areas to the inner areas. The food searching migrations after spawning are

apparently stray wanderings with no particular destination in view and the winter migrations in autumn pass from the inlets to the open sea.

The migration speed of the pike-perches is generally 0,1 - 0,3 kilometres daily but the highest speed observed was 2.85 kilometres daily.

Each inlet in the area facing Helsinki has its own pike-perch standard. The interchange of genes between them stays low and the pike-perches arrive yearly to spawn in their own inlets.

The pike-perches in Vartiokylänlahti form a more closed entity than those in Vanhankaupunginlahti or Laajalahti. Amongst the pike-perches removed from one inlet to another, the biggest ones to a great extent return while the small ones, of a size of less than 30 centimetres, partly accept the new inlet as home area.

Of the pike-perch catch of the whole year, 45.3 % is caught in May-July, 64.9 % in May-September and in December-March in winter only 7,5 %. In the Vanhakaupunki and Tullisaari open sea areas as well as Laajalahti and Vartiokylä inlets July is the most important pike-perch catching month. In the Lehtisaari and Seurasaari open sea areas it is August, in the Kruunuvuori open sea area April-July, in the Kallahti open sea area May and in the outer areas fishing is divided in a more even way between various months.

The average mortality calculated according to the mark return information is 30 % while being greatest in Vartiokylänlahti inlet or 89 %. The mortality of small pike-perches is lower than that of the pike-perches of a size of more than 25 centimetres. 5,5 % of the pike-perches are caught in annual fishing. According to the age division, the average mortality is 79 %.

When planting from an own natural feed pond, the returned kilogram of pike-perch will be up to 8 - 10 pennies.

The length growth of the pike-perches takes place in July-September, the addition of weight in July-October. The average growth is 7.02 cm/year. There are no differences between the sexes as to the rate of growth. The average addition of weight is 245 gr/year. Small pike-perches grow more length and less weight annually than bigger ones.

The pikes brought to Helsinki from Inkoo and Ahvenanmaa proved out to be more movable than the planted ones acquired in the own water areas. The pikes migrated rather rapidly from Laajalahti inlet and stayed in the Westend open sea area and in the area facing Espoo, part of them, however, stayed already in the Seurasaari open sea area. A part also migrated from the Vanhankaupunki open sea area but a great part stayed there; also in the Matosaari and Kruunuvuori open sea areas the migration distances stayed short.

Of the pikes marked to their original living areas, only one migrated far, from the Matosaari open sea area to Nokkala (15 km). The longest migration observed extended to Ahvenanmeri sea (approx. 250 km), this pike was originally from Inkoo.

Seasonal migrations were not observed.

The migration speed of the pikes is generally in the area of 0.00 - 0.02 km per day. The greatest figure observed was 9.00 km per day. The speed of five pikes had exceeded 1 km per day.

44.9 % of the pike catch of the whole year is caught in May-June. Another summit is in October when the catch is 20,5 %. In November-April the catch is only 12,9 %.

The average mortality of the pikes brought from Inkoo was 85 % in a year, in which the share of fishing is 13 % and that of unknown reasons 72 %. Raised in the own natural feed pond the returned kilogram of pike will cost approximately 3 pennies.

In the frames of this study it has been impossible to make very trustworthy conclusions of the pike's growth. The average annual growth was calculated to be 3.2 cm and 415 g. Some growth clearly takes place as early as in May.

The circulation area of the breams in the area facing Helsinki extends to Kallvik headland in the east and to Pikkalanlahti inlet and Inkoo in the west. The most distant mark findings came from the west side of the Rysäkari rock.

More than half (58,5 %) of the breams were recovered at a distance of less than 5 kilometres from the marking place. 4,9 % had migrated more than 50 kilometres.

The bream has a spawning migration in spring to inlets from the nearer open sea areas where they return after spawning.

Each inlet has its own bream standard but there is more blending than in connection with the pike-perches. The breams moved in other areas do not attempt to return to their old home inlet but do not accept the new inlet as their living area either.

The migration speed is generally 0,1 - 0,3 km per day. The greatest figure observed was 0,5 km per day.

45,3 % of the bream catch of the whole year is caught in April-May, in the winter months only 12 %.

The mortality of the breams is 71 % as to the fish of a size of more than 30 centimetres, with the share of fishing being only 2,3 %.

The average length growth after one period of growth is 1,5 cm and after two periods 2,5 cm. Some growth takes place as early as at the end of May.

The greatest part of the carps planted in the Kruunuvuori open sea area migrated to the Vanhakaupunki open sea area, rather much also to the Tahvonlahti inlet. The longest migrations in the direction of the coastline extended to Suvisaaristo and Pellinki. Two carps were found in Estonia. Most of the Laajalahti inlet marking batch have stayed in the marking place. The longest migrations have reached to Fagerviken in Inkoo and to Espoonlahti inlet. The greatest part from the Seurasaari open sea area have migrated to the Laajalahti inlet.

The carps move into deeper water for winter, with a small part, however, staying in the inlets.

The migration speed is normally less than 0,1 km per day. The greatest speed observed was 4,17 km per day.

Most carp is caught in May-September. 52,4 % of the mark findings have been made in August-September. In winter the mark findings are only accidental.

The mortality of the carps is on the average 86 % annually, in which the share of fishing is 28 % and that of natural mortality 58 %. Mortality is lower with the fish planted in Laajalahti inlet than with those planted in the Kruunuvuori open sea area.

Out of one thousand 2-3-year-old planted carps 325,5 carps or 201,8 kilograms are caught back during the first three years.

The carps's growth is strongest in July. Growth ends in September. Average addition of growth after one period of growth is 8,91 cm and after two 15,50 cm. The weight grows in the first year after planting 400 - 500 g.

The tenches planted in the Kruunuvuori open sea area proved out to be much more mobile than those planted in the Laajalahti inlet. The bulk had migrated from the Kruunuvuori open sea area to the Vanha-

kaupunki open sea area. The most distant findings have been made in Espoo by Ramsö and in the Finnå inlet as well as in Östersundom, Hansholmen and Katajaluoto.

The tenches planted in the Laajalahti inlet have generally migrated at most to the Seurasaari and Lehtisaari open sea areas. The most distant mark findings are from the Finnå inlet, Varsasaari and the Käärmeluoto rocks.

The migration speed of no tench exceeded 1 km per day. The observed speed of the tench was 0,67 km per day.

93,9 % of the tench catch of the whole year is caught in May-September. In January-March no tenches are caught.

The average mortality of the tench is 53 %, in the Kruunuvuori open sea area marking batch 69 % and in the Laajalahti inlet one 32 %. The share of fishing in the total mortality is 12 %, with those planted in the Kruunuvuori open sea area being 17 % and with those in the Laajalahti inlet 8 %.

In eight years from planting an average of 238,6 tenches or 68,3 kg of the tenches planted in the Laajalahti inlet are caught back. An average of 246,3 tenches or 54,8 kg of those planted in the Kruunuvuori open sea area are caught back in seven years.

The average addition of length after one period of growth was 3,44 cm and after two 5,68 cm. The tenches in the Laajalahti inlet marking batch grew more rapidly than those in the Kruunuvuori open sea area batch. The period of growth of the tench is a rather short period in late summer in July-August.