Environment and Climate Change Canada
Environnement et Changement climatique Canada

ᓇᒧᖕᒫᓯᒪᓂᖕᒋᑦ ᓇᓄᐃᑦ (*Ursus maritimus*) ᑕᓯᐅᔭᕐᔪᐊᒥ ᐱᔾᔪᑎᒋᓪᓗᒍ ᑕᕆᐅᖅ ᓯᑯᐊ ᐊᓯᖕᒍᖅᓯᒪᓕᕐᒪᑦ, 2017-ᒥᑦ 2022-ᒧᑦ ᑭᖕᒍᓪᓕᖅᐹᖅᓯᐅᑎ ᐅᓂᒃᑳᖅ

ᑎ. ᒥᒃᔨᑦᓯ[1,4], ᐃᓐ.ᔨ. ᓚᓐ[1], ᔨ. ᐃᒻ. ᓄᐊᑐᓚᑉ[2], ᕕ. ᑐᓕᒻ[3], ᓯ. ᑕᐃᕕᔅ[4], ᐊ. ᐃ ᑐᕈᑦᓱ[4]

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[4] ᐊᐅᓚᑦᓯᕕᖕᒐ ᐆᒪᔪᓂᒃ ᖃᐅᔨᓴᖅᑎᒻᒪᕇᑦ, ᐃᓕᓐᓂᐊᕐᕕᒃᔪᐊᖅ ᐊᐃᐳᑕ, ᐃᒻᒪᑕᓐ, ᐊᐃᐳᑕ T6G 2E9

ᐊᑏ ᐃᓕᓴᓇᓗᒍ ᐅᖃᓕᒫᒐᖅ: ᒥᒃᑭᑦᓯ, ᑎ., ᓚᓐ, ᐃᓐ.ᔾ., ᑐᓕᓪ, ᕕ., ᑕᐃᕕᔅ. ᔨ., ᐊᒻᒪᓗ ᑐᓛᑦᓯ, ᐊ, ᐃ. (2023). ᓇᒧᖕᒑᕙᖕᒪᖕᒑᑕ ᐊᓯᕈᖅᑐᑦ ᓇᓄᐃᑦ (*Ursus maritimus*) ᑕᓯᐅᔭᕐᔪᐊᒥ ᒪᓕᒃᑐᑦ ᑕᕆᐅᖅ ᖃᓄᕆᑑᓂᖏᓐᓂᒃ, 2017-2022 ᑭᖑᓪᓕᖅᐹᖅᓯᐅᑎ ᐅᓂᒃᑳᖅ, ᐊᕙᑎᓕᕆᔨᒃᑯᑦ ᐊᒻᒪᓗ ᓯᓚ ᐅᖅᑰᓯᕙᓪᓕᐊᓂᖓᓄᑦ ᐊᓯᕈᖅᑐᖅ ᑲᓇᑕ, 32 ᒪᒃᐱᒐᖅ.

ᐊᐅᓚᑦᓯᔨᓂᑦ ᓇᐃᓈᖅᓯᒪᔪᖅ

ᖃᐅᔨᓴᖅᐳᒍᑦ ᓇᒧᖔᓯᒪᖕᒪᖔᑕ ᐊᓯᕈᕐᒪᖔᑦ ᐊᒻᒪᓗ ᐃᓚᒃᑲᓐᓂᖏᑦ ᓇᓄᐃᑦ ᑖᒃᑯᓇᖔᖅᑐᑦ ᓇᓄᕐᓂᑦ ᖃᐅᔨᓴᕈᑎᑖᖑᓯᒪᔪᓂᑦ ᑕᕆᐅᖓᓂ ᖃᓂᒋᔭᖓᓂ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ ᑭᒡᓕᐊᓂᑦ ᐊᕙᑖᓂᑦ 2017 ᐊᒻᒪᓗ 2022. ᐊᑐᖅᓯᓚᐅᖅᑐᒍᑦ ᖃᓄᐃᓕᐅᕈᑎᑦ ᖃᐅᔨᓴᖅᓚᐅᖅᑕᑦᑕ ᓇᓄᐃᑦ ᑭᖑᓕᖏᑦ ᓇᒧᖔᓯᒪᕕᖏᑦ ᐃᓂᖏᑦ ᐱᓪᓗᒋᑦ ᐊᒥᐊᒃᑯᑦ ᓯᑯᓂ ᐃᓗᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ ᓇᒧᖔᓯᒪᓂᖏᑦ ᐊᒻᒪᓗ ᖃᓄᖅ ᐊᔾᔨᒌᙱᑑᑕᐅᖕᒪᖔᑕ ᖃᐅᔨᓴᕐᓗᒋᑦ ᐊᕐᕌᒍᑕᒫᑦ ᑕᒫᓂᕐᓇᔪᑦ ᑕᐃᒫᒃ ᐊᔾᔨᖏᓐᓂᒃ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᒋᓗᒋᑦ ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ, ᐃᓐᓇᐃᑦ ᐊᕐᓇᐃᑦ, ᐃᓐᓇᕈᓯᔪᑦ ᐊᕐᓇᐃᑦ ᐊᒻᒪᓗ ᐃᓐᓇᕈᓯᔪᑦ ᐊᖑᑎᑦ.

ᑕᐃᑲᓂ ᐱᒋᐊᓕᖅᑎᓪᓗᒍ ᐃᓕᑦᑎᓇᓱᒃᑐᑦ, ᑕᒪᕐᒥᐸᓗᒃ ᓇᓄᐃᑦ ᐃᓚᖏᓐᓂ ᑭᒡᓕᐊᓃᓚᐅᖅᑐᑦ ᐱᓕᕆᔭᐅᓚᐅᙱᑦᑐᑦ ᐊᒻᒪᓗ ᓂᕕᖓᑖᓕᖅᑕᐅᓚᐅᙱᑦᑐᑦ ᖃᐅᔨᓴᖅᑎᓂᑦ (57-71% ᐊᕙᑖᓂᑦ 2017 ᐊᒻᒪᓗ 2019), ᓂᕕᖓᑖᓕᖅᑕᐅᓚᐅᖅᓯᒪᓪᓗᑎᒃ ᓇᓄᐃᑦ ᑲᑎᖓᔪᑦ ᑖᒃᑯᓄᖓ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (72%) ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (28%) ᓂᕐᔪᑎᑦ. 2021-ᒥ, ᑕᐃᑲᓂ ᑕᒪᒃᑭᑦᑎᐊᕋᓱᒃᑎᓪᓗᒋᑦ ᖃᖓᑕᔫᒃᑯᑦ ᓈᓴᐃᓪᓗᑎᒃ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᖃᖓᑕᔫᒃᑯᑦ ᐱᓕᕆᐊᖑᓚᐅᖅᑐᑦ, ᓯᑯᒐᓛᖕᓂ ᐃᓗᐊᓂ ᑭᒡᓕᖏᑦᑕ ᑖᒃᑯᐊ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ, ᑕᐃᑲᖓᑦ ᓯᔅᓴᖓᑕ ᐱᒍᐊᓄᑦ, ᐋᓐᑎᐅᕆᐅ. ᖃᐅᔨᓴᕈᑎᒃᓴᖅᑖᓚᐅᖅᑐᒍᑦ 183 ᐊᑐᓂ ᓇᓄᕐᓂᒃ ᑕᐃᑲᖓᖅ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑖᒃᑯᓇᖓᑦ 25% ᓇᓗᓇᐃᖅᑕᐅᓚᐅᖅᑐᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᓐᓂᒃ, 10% ᑖᒃᑯᓄᖓ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᐊᒥᐊᒃᑯᓪᓗᑎᒃ 65% ᓯᕗᓪᓕᕐᒥ ᐱᓕᕆᐊᖑᔪᓂ. ᑕᐃᑲᓂ 2022 ᓯᑯᓚᒫᓕᓚᐅᖅᑐᖅ ᑕᒪᕐᒥᐸᓗᒃ ᒫᓂᑑᐸ ᐊᒻᒪᓗ ᐋᓐᑎᐅᕆᐅ ᓯᔅᓴᖏᑦ ᐊᒻᒪᓗ ᓯᑯᖃᕐᓂᖅᓴᐅᓪᓗᓂ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ ᐊᔾᔨᓇᓂᐅᒃ 2021-ᒥᑦ. ᖃᐅᔨᓴᕈᑎᑖᓚᐅᖅᑐᒍᑦ 73 ᓇᓄᕐᓂᑦ ᑕᐃᑲᖓᑦ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ 2021-ᒥ ᐅᑯᐊᓗ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᒃᑲᓐᓂᓚᐅᖅᑐᑦ ᑕᐃᑲᓂ 2022; 64%-ᖏ ᑖᒃᑯᓇᖓᑦ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᒃᑲᓐᓂᖅᑐᑦ ᑕᐃᑲᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ 36% ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ. ᖃᓄᖅ ᐊᔾᔨᒌᙱᑎᒋᖕᒪᖔᑕ, ᖃᐅᔨᓴᕈᑎᑖᓚᐅᖅᑐᒍᑦ 120 ᓇᓄᕐᓂᒃ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ 2021-ᒥ ᐅᑯᐊᓗ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᒃᑲᓐᓂᓚᐅᖅᑐᑦ 2022-ᒥ; 93% ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ ᐊᒻᒪᓗ 7% ᑕᐃᑲᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ. ᐅᓇ ᐱᓯᒪᓂᖃᖅᑐᖅ ᐃᒻᒪᖄ ᐅᓄᖅᓯᒋᐊᖅᑐᑦ ᓇᓄᐃᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ ᑕᐃᑯᖓ 29% ᐊᒻᒪᓗ ᑕᐃᒫᓪᓗᐊᖅᑕᐅᖅ ᐅᓄᕈᓐᓃᓇᕈᓪᓗᑎᒃ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑕᐃᑲᖓᑦ 2021 ᑎᑭᓪᓗᒍ 2022 ᒪᓕᒃᑐᑦ ᓄᒃᑕᕐᓂᖏᓐᓂᒃ ᖃᐅᔨᓴᖅᓯᕗᑦ ᓈᓴᖅᓯᒪᔭᑦᑎᒍᑦ.

ᑕᕆᐅᖅ ᓯᑯᐊ ᓄᒃᑕᖅᑎᑦᑎᓲᖅ ᓇᓄᕐᓂᒃ ᑕᓪᓕᒪᐃᒃᑲᓐᓂᓪᓗᐊᖅᓱᒍ ᓅᒃᑕᕋᔭᖅᑐᑦ ᐱᓇᖕᓇᖅᐸᓯᖓᓄᑦ ᐊᕐᕌᒍᓂ ᑕᐃᑲᓂ ᓯᑯᒐᓛᖃᓕᕌᖓᑦ ᐱᓇᖕᓇᖓᓂ ᐃᒃᐱᐊᕐᔪᐊᑕ. ᐃᓐᓇᖅ ᐊᖑᑎᑦ ᓇᒧᖓᐅᔾᔪᓯᖏᑦ ᐊᔾᔨᒋᔪᓐᓃᖅᑕᖏᑦ ᐊᕙᑖᓂ ᐊᕐᕌᒍᑦ ($F_{2,\ 222}$ =4.175, P= 0.02) ᖃᖓᐅᓕᕌᖓᑦ ᓅᖃᑦᑕᕐᓂᓴᐅᓕᓲᑦ ᐱᔾᔪᑎᒋᓪᓗᒍ ᐊᖏᓂᖅᓴᐅᓕᕐᒧᑦ ᐊᕐᕌᒍ ᐃᓗᐊᓂ ᐊᓯᕈᐊᑦᑕᖅᑐᑦ ᓯᑯᐃᑦ. ᐃᓚᖏᑦ ᐊᕐᓇᐃᑦ ᓇᒧᖔᐅᑲᐅᓂᖅᓴᐅᔪᑦ ᑖᒃᑯᓇᖓᓪᓕ ᐃᓐᓇᕐᓂᑦ ᐊᕐᓇᓂᑦ ᐅᕝᕙᓘᓐᓃᑦ ᐃᓐᓇᕐᓂᑦ ᐊᖑᑎᓂᑦ ($F_{3,\ 185}$ = 3.57, P= 0.02) ᑭᓯᐊᓂ ᖃᓅᑎᒋᖕᒪᖔᑕ ᖃᐅᔨᓇᓱᒃᓯᒪᓇᑎᒃ ᐃᒻᒥᖕᓄᑦ ᑭᓯᐊᓂ ᐊᓯᖏᓐᓅᖏᑦᑐᖅ ᐃᓚᖏᓐᓄᑦ ᐃᓐᓇᕐᓄᑦ ᐊᖑᑎᓄᑦ. ᐊᑐᓂ ᐃᒻᒥᒍᑦ ᐱᕚᓪᓕᕈᑎᖃᖅᑕᖅᑐᖅ ᖃᓄᑐᐃᓐᓇᖅ ᓇᒧᖔᓯᒪᓂᖏᑦ ᐊᖏᔫᕗᖅ 87%, 66%, 77% ᐊᒻᒪᓗ 77% ᐃᓐᓇᕐᓄᑦ ᐊᖑᑎᓄᑦ, ᐃᓐᓇᕐᓄᑦ ᐊᕐᓇᓄᑦ, ᐃᓚᖏᓐᓄᑦ ᐃᓐᓇᕐᓄᑦ ᐊᖑᑎᓄᑦ, ᐃᓚᖏᓐᓄᑦ ᐃᓐᓇᕐᓄᑦ ᐊᕐᓇᓄᑦ, ᐊᑐᓂ.

ᑎᑎᕋᖅᓯᓚᐅᖅᑐᒍᑦ ᐊᓄᕐᓂᖅᓴᐅᔪᑦ ᑭᐳᒃᑐᑦ ᐊᕙᑖᓂᑦ ᓴᓂᓕᓇᔭᒥᖕᓂᑦ ᐃᓚᒌᑦ ᓇᓄᐃᑦ ᑕᐃᒪᖓᓂᑦ ᐅᖃᐅᓯᐅᕙᓕᕐᒪᑕ ᐅᓄᕐᓂᖅᓴᖏᑦ ᓇᒧᖔᖃᑦᑕᖅᑐᑦ ᑕᒪᕐᒥᒃ ᐅᑭᐅᖏᑦᑎᒍᑦ ᐊᒻᒪᓗ ᐊᕐᓇᐃᑦ ᐊᖑᑎᑦ ᐊᒻᒪᓗ ᐊᑕᔪᑦ ᖃᓄᓇᑑᓂᖓᓄᑦ ᑕᕆᐅᖅ ᓯᑯᐊ. ᓇᓂᔭᑦᑎᒍᑦ ᐃᓱᒪᓕᖅᓯᕗᖅ ᕿᓚᒥ ᓇᒧᖔᖃᑦᑕᖅᑐᑦ ᓴᖑᖃᑦᑕᕐᓂᖏᑦ ᓇᓄᐃᑦ, ᐱᓗᐊᖅᑐᒥᒃ ᖃᓂᒋᔭᖏᓐᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ/ᐊᑭᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦᑕ ᑭᓪᓕᖏᑦ ᐅᓄᖅᓯᔪᑦ ᖃᐅᔨᒪᓇᖑᑦᑐᒧᑦ ᖃᓄᖅ ᐅᓄᖅᑎᒋᖕᒪᖔᑕ ᐊᒻᒪᓗ ᐊᓯᕈᖃᑦᑕᕐᓂᖏᑦ ᑖᒃᑯᐊ ᖃᑦᓯᐅᓇᓱᒋᔭᐅᓂᖏᑦᑕ ᖃᖓᑕᓲᖅᑯᑦ ᓈᓴᖅᑕᐅᓯᒪᔪᓂ ᐊᑐᓂ ᓇᓄᐃᑦ ᐊᕗᑎᓯᒪᔪᑦ. ᑕᐃᒪᓗ ᖃᐅᔨᒪᖏᓂᕗᑦ ᐱᒻᒪᕆᐅᔪᖅ ᐊᒃᑐᐃᔪᓐᓇᕐᒪᑕ ᐊᐅᓚᑕᐅᓂᖏᓐᓂᒃ ᓇᓄᐃᑦ ᑕᓯᐅᔭᕐᔪᐊᒥ.

ᐱᒋᐊᕐᓂᖓ

ᓇᓄᐃᑦ ᓇᒧᖔᑎᓲᑦ ᑕᒪᐅᓐᓇ ᓯᑯᒃᑯᑦ ᐃᒫᒍᑦ ᓯᓚᕐᔪᐊ ᑲᔾᔮᐊᓅᑦᑐᑦ ᐅᑭᐅᖅᑕᖅᑐᒥ 19 ᖃᑦᓰᓇᐃᑦ ᐃᓚᖏᑦ ᓇᓄᐃᑦ ᐊᒻᒪᓗ ᐊᑐᖅᓯᓪᓗᑎᒃ ᑭᓯᐊᓂ ᑕᕆᐅᖅ ᓯᑯᐊᓂ ᐃᓂᖃᖅᓗᑎᒃ ᑕᐃᑲᖓᓪᓗ ᓇᑦᑎᕋᓱᒃᐸᒃᓗᑎᒃ, ᑖᒃᑯᐊ ᓂᕿᓪᓗᐊᑕᕆᖕᒪᒋᑦ (ᓯᑑᓕᖕ ᐊᒻᒪᓗ ᐅᕆᑦᓯᓚᓐᑦ 1995, ᓚᐃᑐᓕ ᐊᓯᖏᓪᓗ. 2008, ᐲᒪᓐ ᐊᓯᖏᓪᓗ. 2008, ᑲᓕᓯᐊ ᐊᓯᖏᓪᓗ. 2015). ᑕᐃᒪᓐᓇᐅᓚᓗᐊᖅᑎᓪᓗᒍ ᓇᓄᐃᑦ ᐅᐸᒃᓯᓯᒪᐃᓐᓇᓲᑦ ᑕᒫᓂᑦᑕᐃᓐᓇᐸᓗᒃ ᑎᑭᐅᑎᔪᓐᓇᖅᑕᒥᓄᑦ ᐃᓕᕐᑯᓯᑐᖃᖏᑦ, ᐅᑭᐅᖅᑕᖅᑐᖅ ᐅᕐᑰᓯᕚᓪᓕᐊᖕᒪᑦ ᓱᒃᑲᓕᔪᒥᒃ ᑕᐃᒪᓗ ᓯᓚᕐᔪᐊᓕᒫᑎᒍᑦ ᐊᒻᒪᓗ ᓄᖑᓕᖅᐳᖅ ᐅᑭᐅᖅᑕᖅᑐᖅ ᑕᕆᐅᖓᑕ ᓯᑯᐊ ᓱᒃᑲᓕᔾᒪᕆᐋᓗᖕᒥᒃ (ᓯᑐᓗᕚ ᐊᓯᖏᓪᓗ. 2012, ᐅᓚᓐᑕᓂᓐ ᐊᓯᖏᓪᓗ. 2022). ᐱᑕᖃᕈᓐᓃᖅᐸᑦ ᑕᕆᐅᖅ ᓯᑯᐊ, ᑕᐃᒪᐃᑎᑕᐅᓗᓂ ᐃᓄᖕᓂᑦ ᐊᓯᕈᖅᑎᑦᑎᔪᑦ ᓯᓚᐅᑉ ᖃᓄᐃᔾᔪᑎᖓᓂᒃ, ᐅᑯᐊ ᐅᖃᐅᓯᖃᖅᓯᒪᔪᑦ ᐊᑯᓂᐅᔪᒃᑯᑦ ᓴᐳᓐᓂᐊᕆᐊᖃᕐᓂᖏᓐᓄᑦ ᐃᓱᒫᓘᑎᑦ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐳᐃᔨᓄᑦ, ᑖᒃᑯᓄᖓᓗ ᓇᓄᕐᓄᑦ. (ᓯᑑᓕᖕ ᐊᒻᒪᓗ ᑐᓚᐅᓯ 1993, ᑐᓚᐅᓯ ᐊᓯᖏᓪᓗ. 2004, ᓚᐃᑐᓕ ᐊᓯᖏᓪᓗ. 2015).

ᐅᑯᐊ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᑦ ᐱᑕᖃᕐᓲᑦ ᓂᒋᐊᓂ ᐅᖓᓯᓗᐊᕋᑎᒃ ᐆᒪᔪᓄᑦ. ᐅᓄᖅᑐᑦ ᐅᐱᕐᖔᒃᑯᑦ ᐅᕐᑰᓯᑎᓪᓗᒍ ᓄᓇᖓᓂ ᕿᓚᒥ ᑕᕆᐅᖅ ᓯᑯᐊ ᐊᐅᖃᑦᑕᖅᑐᖅ ᓯᑯᐃᖃᑦᑕᖅᑐᖅ ᐊᒻᒪᓗ ᑭᖑᕚᖅᓯᒪᓪᓗᓂ ᖁᐊᖃᑦᑕᖅᑐᖅ (ᑳᓂᐅ ᐊᒻᒪᓗ ᑲᐅ 2005, ᓯᑑᓕᖕ ᐊᒻᒪᓗ ᐹᑭᓐᓯᓐ 2006, ᕼᐅᑦᔅᕼᐃᒻ ᐊᓯᖏᓪᓗ. 2010). ᐅᑯᐊ ᐊᓯᕈᖅᑐᑦ ᐊᑯᓂᐅᑎᒋᓂᖓ ᓇᓄᐃᑦ ᓇᑦᑎᕋᓱᒍᓐᓇᕐᓂᖓᑕ ᓯᑯᒥ, ᐱᓗᐊᖅᑐᒥᒃ ᐊᑦᑕᕐᓇᖅᓯᑎᓪᓗᒍ ᐅᐱᕐᖔᒃᑯᑦ, ᐊᒻᒪᓗ ᐊᔭᒃᓯᕗᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᕐᓂᒃ ᐊᑯᓂᐅᓂᖅᓴᖅ ᓄᓇᒦᖃᑦᑕᓕᖅᐳᑦ, ᑕᐃᑲᓂᓗ ᓈᒻᒪᒋᓐᖏᑕᒥᖕᓂᑉᐸᑦ ᑎᒥᖓᓄᑦ (ᓯᐅᓕ ᐊᓯᖏᓪᓗ. 2013, ᓚᓐ ᐊᓯᖏᓪᓗ. 2016, ᔫᓐᓯᓐ ᐊᓯᖏᓪᓗ. 2020). ᐊᑯᓂᐅᓂᖅᓴᖅ ᓯᑯᖃᖏᒻᒪᑦ ᐊᑕᔪᖅ ᑎᒥᖏᑦ ᓴᓪᓗᐊᓘᓕᖕᓇᖅᑐᑦ ᐊᒻᒪᓗ ᕿᑐᖓᒃᓴᖃᖏᓂᖅᓴᐅᓗᑎᒃ ᐊᑭᓐᓇᖅᐸᓯᐊᓂᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᑦ (ᑐᓚᐅᓯ ᐊᒻᒪᓗ ᓯᑑᓕᖕ 1995b, ᓯᑑᓕᖕ ᐊᓯᖏᓪᓗ. 1999, ᓯᑭᐅᓪᓗ ᐊᓯᖏᓪᓗ. 2016). ᒫᓐᓇᓵᖅ, ᐅᓄᕈᓐᓃᖅᑐᑦ ᐆᒪᔾᔪᑎᒃᓴᖃᕈᓐᓃᕋᒥᒃ ᐊᒻᒪᓗ ᑕᕆᐅᖅ ᓯᑯᐊ ᑕᐃᒪᐃᑎᑦᑎᔪᖅ (ᐅᓕᔅᕼᐅ. 2007, ᓚᓐ ᐊᓯᖏᓪᓗ. 2016). ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᑯᓚᐃᑦᑐᒥᒃ ᒥᐊᓂᕆᔭᐅᖏᓂᖅᓴᐅᓕᕐᒪᑕ ᓇᓄᐃᑦ ᑕᐃᒪᖓᒥᑦ ᐊᓂᒍᖅᑐᑦ 40 ᐊᕐᕌᒍᓂ, ᑭᓯᐊᓂ ᑕᑯᓯᒪᔪᑦ ᑕᐃᒫᑦᑎᐊᖅ ᐊᑐᖅᐸᒃᑲᖏᑦ, ᐊᑯᓂᐅᓂᓴᐅᔮᖓᓚᑕ ᓯᑯᖃᖓᓂᖓ ᐊᕐᕌᒍᒥ (ᓯᑑᓐ ᐊᒻᒪᓗ ᓚᐃᑐᓕ, 2016), ᐊᒻᒪᓗ ᑎᒥᖏᑦ

ᓱᒃᑯᑉᐸᓪᓕᐊᔪᑦ ᐊᒻᒪᓗ ᐆᒪᓇᓱᒐᑐᐃᓐᓇᓲᑦ ᐊᕙᑖᓂ 1980 ᐊᒻᒪᓗ ᐱᒋᐊᕐᓂᖓᓂ 2000 (ᐊᑉᐹᑦ ᐊᓯᖏᓪᓗ. 2007, 2016).

ᓇᒧᖐᓯᒪᓂᖏᑦ, ᐅᓄᕐᓂᖏᑦ, ᐊᒻᒪᓗ ᕿᒪᒍᑎᕙᓪᓕᐊᔪᑦ ᑭᒡᓕᖏᓐᓂᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂᓂᑦ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ (ᓴᕿᔮᖅᑐᖅ 1) ᐱᔾᔪᑎᖃᖅᑐᑦ ᓇᓐᓄᒃᑕᐅᔪᓄᑦ ᐊᒻᒪᓗ ᐱᔭᐅᒃᑲᓐᓂᖅᑐᑦ ᓂᕕᖓᑖᓕᑦ (ᓯᑑᓕᖕ ᐊᓯᖏᓪᓗ. 1977, ᑐᓚᐅᓯ ᐊᒻᒪᓗ ᓯᑑᓕᖕ 1990, ᑐᓚᐅᓯ ᐊᒻᒪᓗ ᓯᑑᓕᖕ 1995a, ᑕᐃᓗ ᐊᒻᒪᓗ ᓖ 1995). ᑕᐃᒪᓐᓇᐅᓚᓗᐊᖅᑎᓪᓗᒍ ᓴᓂᑦᑎᐊᖓ ᓄᓇᖓᓂ ᓯᑯᓯᓛᕐᒥᐅᑦ ᐃᒪᖓ ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᑦ ᑲᑎᖓᔭᖅᑐᑦ ᐊᑭᓐᓇᖅᐸᓯᐊ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᐊᑐᓂ ᑕᕆᐅᖅ ᓯᑯᐊᓂ ᓄᓕᐊᓲᑦ (ᕖᖕᑯᓂ ᐊᓯᖏᓪᓗ. 2016), ᑕᐃᑲᓂ ᓯᑯᖅᑲᖏᓂᓕᒫᖓᓂ, ᐅᓄᓲᑦ ᓇᓄᐃᑦ ᓄᓕᐊᓲᑦ ᐊᐅᔭᕐᕕᒋᓂᐊᖅᑕᒥᖕᓂ ᐊᒻᒪᓗ ᐅᐸᒍᑎᑲᑕᖏᑦᑐᐊᖅᑐᑦ ᓴᓂᒥᖕᓂ ᓇᓄᕐᓄᑦ ᑕᐃᒪᓐᓇᐅᓇᓯᒋᔭᐅᔪᑦ (ᓯᑑᓕᖕ ᐊᓯᖏᓪᓗ. 1977, ᑐᓚᐅᓯ ᐊᒻᒪᓗ ᓯᑑᓕᖕ 1990, ᐲᑳᒃ ᐊᓯᖏᓪᓗ. 2010, ᐊᑉᐹᑦ ᐊᒻᒪᓗ ᒥᑦᑎᐅ 2012, ᓚᓐ ᐊᓯᖏᓪᓗ. 2016). ᓄᓕᐊᖅᑦᑕᖅᑐᑦ ᐊᐅᔭᕐᕕᒋᓂᐊᖅᑕᒥᖕᓂ ᓄᓇᒥ ᐊᒥᓲᑦ, ᐃᓗᐊᓂ ᐊᕐᕌᒍ ᐊᔾᔨᒌᓐᖏᑑᑎᓪᓗᒍ ᓯᑯᖓ ᑕᑯᑎᑦᑎᓯᒪᔪᖅ ᓇᓄᐃᑦ ᓇᒧᖐᓂᖅᓴᐅᓲᑦ ᓇᐳᔭᑦᑐᑦ ᓯᑯᖅᑲᖏᑎᓪᓗᒍ ᑕᓯᐅᔭᕐᔪᐊᖅ (ᓯᑑᓕᖕ ᐊᓯᖏᓪᓗ. 1999, ᓯᐅᓕ ᐊᓯᖏᓪᓗ. 2013). ᐳᕆᕕᑦ ᐊᒻᒪᓗ ᑯᓕᓈᔅᑭ (1982) ᐊᑐᖅᑕᐅᔪᑦ ᖃᖓᑕᓲᒃᑯᑦ ᓈᓴᖅᑕᐅᓯᒪᔪᑦ ᓯᒡᔭᖏᓐᓂ ᐊᒻᒪᓗ ᑎᑎᕋᖅᑕᐅᓯᒪᔪᑦ ᐊᒥᓲᓂᖅᓴᐅᔪᑦ ᓇᓄᐃᑦ ᐋᓐᑎᐅᕆᐅᒥ (ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ) ᑕᐃᑲᓂ ᐅᓄᖏᓚᐅᖅᑐᑦ ᑕᑯᔭᐅᔪᑦ ᒫᓂᑑᐸᒥ (ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ) ᐊᒻᒪᓗᑦᑕᐅᖅ ᑕᐃᓐᓇ, ᐃᓱᒪᓕᖅᓯᒪᔪᖅ ᐅᓄᕐᓂᖅᓴᐃᑦ ᑕᐅᕗᖓᖕᒌᖅᑕᖅᑐᑦ ᐅᖅᑲᖅᓯᒪᓚᐅᕋᓗᐊᖅᑎᓪᓗᒍ ᑭᖑᓂᑦᑎᓐᓂ ᑕᐃᒪᓐᓇᐅᓇᓯᒋᔭᐅᓪᓗᓂ (ᓯᑑᓕᖕ ᐊᓯᖏᓪᓗ. 1977). ᑭᖑᓂᐊᒍᑦ ᖃᐅᔨᓴᖅᑐᑦ ᑕᑯᑎᑦᑎᔪᑦ ᑖᒃᑯᐊ ᑕᕆᐅᖅ ᓯᑯᖏᑦ ᑕᐃᒪᐃᑎᑦᑎᔪᑦ ᓇᓄᐃᑦ ᓇᒧᖐᓯᒪᓪᓗᑎᒃ ᐃᓗᐊᓂ ᐃᓚᒌᒃᑕᖅᑐᑦ ᑭᓯᐊᓂ ᐊᕙᑖᓃᐅᖏᑦᑐᖅ ᐃᒻᒥᖕᓂᑦ (ᓯᑑᓕᖕ ᐊᓯᖏᓪᓗ. 2004). ᐊᑐᖅᓯᓚᐅᖅᑐᒍᑦ ᓈᓚᐅᑎᑦ ᓂᐱᔭᐅᕆᕙᓪᓕᐊᔪᑦ, ᑕᒪᐃᓐᓂᑦ (ᓯᑑᓕᖕ ᐊᓯᖏᓪᓗ. (1999) ᐊᒻᒪᓗ ᓯᐅᓕ ᐊᓯᖏᓪᓗ. (2013) ᓇᓂᓯᓚᐅᖅᑐᑦ ᑖᒃᑯᐊ ᐊᒥᐊᒃᑯᑦ ᓯᑯᓚᓱᑦ ᓱᓕ ᐱᓇᖕᓇᖓᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐃᓚᖏᑦ ᓇᓄᐃᑦ ᓴᖑᔪᑦ ᓇᖕᒥᓂᖅ ᓯᒃᓯᒥᖕᓄᑦ ᑎᑭᑦᑕᖅᑐᑦ ᓇᒧᖓᓪᓗᑎᒃ ᑕᐅᓄᖓ ᓂᒋᐊᓄᑦ ᑲᓇᖕᓇᖓᓄᑦ. ᑕᐃᒪᓐᓇᐅᓚᓗᐊᕐᒪᑦ, ᐊᔾᔨᒌᓐᖏᑦᑐᑦ ᓄᓇᒥ ᓇᒧᖐᓯᒪᓂᖏᑦ ᓇᓄᐃᑦ ᓄᓇᖓᓂ ᐊᒻᒪᓗ ᖃᓄᖅ ᐅᓇ ᐊᓯᕈᖅᑎᑎᓂᐊᖅᐸ ᓄᖑᑉᐸᓪᓕᐊᖏᓐᓇᕐᓗᑏᑉ ᐱᔾᔪᑎᒋᓪᓗᒍ ᓂᕿᖏᑦ ᓂᕿᒃᓴᖅᑲᖏᓪᓕᑕ ᖃᐅᔨᔭᐅᓪᓗᑎᒃ ᐃᓕᑕᐅᓇᓯᓚᐅᖅᑐᓂᑦ

ᓴᓇᓯᒪᔪᑦ ᓈᓴᖅᑕᐅᔾᔪᑎᖏᓐᓂᑦ ᒫᓐᓇ ᓇᓄᐃᑦ ᑭᒡᓕᖏᓐᓃᑦᑐᑦ. ᐅᓇ ᐱᓗᐊᖅᑐᒥᒃ ᐱᒻᒪᕆᐅᔪᖅ ᓄᓇᐃᑦ ᐊᐅᓚᑕᐅᖕᒪᑕ ᐊᑐᖅᓯᓪᓗᑎᒃ ᖃᖓᑕᓲᓂᒃ ᓈᓴᐃᓪᓗᑎᒃ ᑕᐃᑲᓂ ᐅᓄᕐᓂᖏᑦ ᓇᓚᐅᑖᖅᓯᒪᓪᓗᑎᒃ ᐊᑕᐅᓯᕐᒥ ᐊᕐᕌᒍᒥ.

ᑕᐃᑲᓂ 2011/2012, 2016, ᐊᒻᒪᓗ 2021, ᖃᖓᑕᓲᒃᑯᑦ ᓈᓴᖅᑕᐅᓯᒪᔪᑦ ᖃᖓᑕᓪᓗᑎᒃ ᓇᓚᐅᑖᖅᓯᒪᔪᑦ ᐅᒥᓲᓂᕋᖅᑕᐅᓚᐅᖅᑐᑦ ᐊᑭᓐᓇᖅᐸᓯᖓᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (ᓯᑕᐃᐳᑕᓐ ᐊᓯᖏᓪᓗ. 2014, ᑎᒃ ᐊᓯᖏᓪᓗ. 2016, ᐊᑦᑭᓐᓴᓐ ᐊᓯᖏᓪᓗ. 2022) ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᑦ (ᐊᑉᐹᑦ ᐊᓯᖏᓪᓗ. 2015, ᐊᑉᐹᑦ ᐊᓯᖏᓪᓗ. 2018, ᓄᐊᑦᑐᓚᑉ ᐊᓯᖏᓪᓗ. 2022). ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ, ᐅᓇ 2011 ᓇᓚᐅᑖᖅᓯᒪᓚᐅᖅᑐᖅ 1030 (CI = 754-1406), ᓄᖑᐸᓪᓕᐊᔪᑦ ᐃᒪᓐᓇᐅᑎᓕᖓ 18% ᑕᕝᕗᖓ 842 (CI = 562-1121) ᑕᐃᑲᓂ 2016 ᐊᒻᒪᓗ ᓱᓕᒃᑲᓐᓂᖅ 27% ᓄᖑᐸᓪᓕᐊᔪᑦ ᐅᕗᖓ 618 (CI = 425-899) 2021-ᒥ. ᑕᐃᑲᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ, ᐅᓇ 2011/12 ᓇᓚᐅᑖᖅᓯᒪᓚᐅᖅᑐᖅ 943 (CI = 658-1350), ᓄᖑᐸᓪᓕᐊᔪᑦ 17% ᑕᕝᕗᖓ 780 (CI = 590-1029) ᑕᐃᑲᓂ 2016 ᐊᒻᒪᓗ ᐅᓄᖅᓯᕙᓪᓕᐊᔪᑦ ᐃᒪᓐᓇᐅᑎᒋᔪᖅ 43% ᑕᕝᕗᖓ 1119 (CI = 860-1454) 2021-ᒥ. ᑕᐃᑲᓂ ᓈᓴᐃᔪᓂ, ᐊᒥᓲᓂᖅᓴᐃᑦ ᓇᓄᐃᑦ ᓇᓂᔭᐅᓚᐅᖅᑐᑦ ᑲᓇᖕᓇᖓᓂ Nelson River ᑕᐅᕗᖓ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ/ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑭᒡᓕᐊ ᖃᓅᑎᒋᓚᐅᕐᓂᖓ ᒫᓐᓇᒧᑦ ᑭᖑᓂᑦᑎᓐᓂ ᓯᒃᔭᓂ ᓈᓴᖅᑕᐅᔪᑦ ᑕᐃᑲᓂ 1970 ᑎᑭᓪᓗᒍ 2011 (ᓴᕿᔮᖅᑐᖅ 1, ᐅᖃᖅᓯᒪᔪᖅ ᓄᓇᖓᓄᑦ 2) (ᓯᑑᓕᖕ ᐊᓯᖏᓪᓗ. 2004, ᓯᑕᐃᐳᑕᓐ ᐊᓯᖏᓪᓗ. 2014, ᑎᒃ ᐊᓯᖏᓪᓗ. 2017, ᐊᑦᑭᓐᓴᓐ ᐊᓯᖏᓪᓗ. 2022). ᑕᐃᒪᓐᓇᐅᕙᓗᐊᖅᑎᓪᓗᒍ, ᐱᔾᔪᑎᒋᓪᓗᒍ ᐅᑯᐊ ᓇᓄᐃᑦ ᐅᐸᒃᑕᐅᓯᒪᓗᑎᒃ ᐱᓕᕆᔭᐅᓯᒪᓐᓂᖏᑦᑐᑦ, ᖃᐅᔨᒪᓇᓐᖏᑦᑐᖅ ᐅᓄᖅᓯᖕᒪᖔᑕ ᓇᓄᐃᑦ ᕿᓚᒥᐅᔪᒥ ᐅᕝᕙᓘᓐᓃᑦ ᐊᑯᓂᐅᔪᒥ ᐊᓯᕈᕐᓇᐅᑎᓪᓗᒍ ᓇᒧᖔᕙᖏᑦ ᓇᓕᐊᑐᐃᓐᓇᖅ ᐃᓚᖏᓪᓘᓐᓃᑦ ᐅᕝᕙᓘᓐᓃᑦ ᖃᓕᓈᓕᖅᓯᒪᕚᑦ ᓂᕐᔪᑎᑦ ᑕᒪᐃᓐᓂᑦ ᑖᒃᑯᓇᖓᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐃᓚᖐᑦ ᓇᓄᖏᑦ. Resolving ᐋᕿᒃᓱᒍᑦ ᐅᓇ ᖃᐅᔨᒪᓐᑎᐊᓐᖏᑦᑐᖅ ᐱᒻᒪᕆᐅᑐᓂ ᐊᐅᓚᑦᑎᔩᑦ ᑕᐅᑦᑐᐊᓂᓪᓕ ᐱᔾᔪᑎᒋᓪᓗᒍ ᑕᒪᕐᒥᒃ ᐃᓚᖐᑦ ᓇᓄᐃᑦ ᐊᖑᓇᓱᒃᑕᐅᖃᑦᑕᖅᑐᑦ, ᐊᒻᒪᓗ ᐊᕐᕌᒍᑕᒫᑦ ᑎᑭᐅᑎᔪᓐᓇᖅᑕᖏᑦ ᐊᖑᓇᓱᒍᓐᓇᖅᓱᒋᑦ ᓴᕿᑕᐅᖃᑦᑕᖅᑐᖅ ᖃᓄᖅ ᐅᓄᖅᑑᓂᖏᑦᑎᒍᑦ ᓈᓴᖅᑕᐅᓯᒪᔪᑦ ᒪᓕᒃᑐᑦ ᒫᓐᓇ ᐃᓚᖐᑦ ᐅᓄᕐᓂᖏᑦ ᑭᒡᓕᐊᓂ ᐊᒻᒪᓗ ᐃᓱᒪᒋᑐᐃᓐᓇᖅᓱᒍ ᑖᒃᑯᐊ ᓇᓄᐃᑦ ᐃᓗᐊᓐᓂᑦᑐᑦ ᑭᒡᓕᐊᑕ ᑖᒃᑯᓇᖓᑦ ᐃᓚᖏᓐᓄᑦ ᐅᑯᐊᓗ ᑕᑯᔭᐅᓯᒪᔪᑐᐊᑦ. ᑐᑭᓯᓪᓗᒍ ᖃᓄᖅ

ᐊᓯᕈᕐᒪᖕᒑᑕ ᐱᔾᔪᑎᒋᓪᓗᒍ ᕿᓚᒥ ᐅᕝᕙᓘᓐᓃᑦ ᓅᕕᖕᒪᑕ ᐅᕝᕙᓘᓐᓃᑦ ᐊᓯᑦᓴᕈᑎᕗᖅ ᐅᓄᕐᓂᖅᒋᓐᓂᒃ ᑕᐃᒪᓗ ᐱᒻᒪᕆᐅᖕᒪᑦ ᖃᐅᔨᒪᓗᒋᑦ ᓴᐳᓐᓂᐊᕋᓯᒍᑎᓄᑦ ᐊᒻᒪᓗ ᐊᐅᓚᑦᑎᔾᔪᑎᓄᑦ.

ᑐᑭᓕᐅᕈᑎᒋᕙᓪᓕᐊᓇᓱᓚᐅᖅᑕᕗᑦ ᑕᒪᑐᒨᓇ ᐃᓕᑦᑎᓇᓱᒃᓱᑕ ᐃᒪᓐᓇ 1) ᖃᐅᔨᑦᑎᐊᕐᓗᒋᑦ ᐃᓚᒋᒐᔭᖅᑕᖅᒋᑦ ᓇᓄᐃᑦ ᑖᒃᑯᓇᖕᒑᖅᑐᑐᖅᑲᓂᑦ ᖃᓂᒋᔭᖕᒋᓐᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ/ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓄᓇᐃᑦ ᑭᒡᓕᐊᓂ ᐊᒻᒪᓗ 2) ᖃᐅᔨᓇᓱᑦᑎᐊᕐᓗᒋᑦ ᐊᕙᑖᓂ-ᐊᕐᕌᒍᒥ ᐊᔾᔨᒌᓐᖏᖅᑲᑦᑕᕐᓂᖏᑦ ᓇᓄᐃᑦ ᓇᒧᖕᒌᓯᒪᓂᖏᑦ ᐱᔾᔪᑎᒋᓪᓗᒍ ᑕᕆᐅᖅ ᓯᑯᐊ.

ᖃᐅᔨᓴᕈᓯᑦ

ᐊᑐᖅᓯᓚᐅᖅᑐᒍᑦ ᖃᐅᖓᓂᑦ ᐲᖅᓯᓪᓗᑕ ᐊᐅᖕᒥᑦ ᖃᐅᔨᓴᕈᑎᑖᕕᒋᓪᓗᒋᑦ ᑕᒫᓂᕐᓇᔪᓂᑦ ᓇᓄᕐᓂᑦ ᓯᒡᔭᒥ ᓄᓇᕗᑦ-ᒫᓂᑑᐸ ᑭᒡᓕᐊᓂ ᑕᐅᕗᖓ ᔭᐃᒻᔅ ᐸᐃ, ᐋᓐᑎᐅᕆᐅ (ᓴᖅᑭᔮᖅᑐᖅ 1). ᖃᐅᔨᓴᕈᑎᑖᓚᐅᖅᑐᒍᑦ ᐱᖕᒋᓱᓪᓗᐊᑕᓂᒃ ᑖᒃᑯᓇᖕᒪᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐃᓚᒌᑦ ᓇᓄᐃᑦ: ᓄᓇ 1, ᓄᓇᕗᑦ-ᒫᓂᑑᐸ ᑭᒡᓕᐊ ᑕᐅᕗᖓ Nelson River; ᓄᓇᖓ 2, Nelson River ᑲᓇᖕᓇᖓ ᑕᐅᕗᖓ ᐱᓇᖕᓇᖓᓄᑦ ᑕᓯᐅᔭᕐᔪᐊᖅ/ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐃᓛᖏᑦ ᓇᓄᐃᑦ ᑭᒡᓕᐊᓂ; ᐊᒻᒪᓗ, ᓄᓇ 3, ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ/ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑭᒡᓕᐊ ᑕᐅᕗᖓ ᔭᐃᒻᔅ ᐸᐃ (ᓴᖅᑭᔮᖅᑐᖅ 1). A 27.5 2017, ᑭᓛᒥᑐᔅ ᑭᒡᓕᓕᒫᖓ ᒫᓂᑑᐸ ᓯᒡᔭᖓ ᓴᖅᑭᔮᖕᒋᑦᑐᖅ ᐊᒃᑐᐃᒥᐊᖅᑲᖕᒋᒻᒪ ᖃᐅᔨᓴᓇᐊᒃᓴᕐᓗ ᓇᓄᕐᓂᒃ ᑕᑯᔭᖅᑐᖅᑕᐅᖃᑦᑕᕐᒪᑕ ᐳᓚᕋᑎᓂᑦ. ᓄᓇ 2 ᕿᓂᖅᑕᐅᓚᐅᖅᑐᖅ ᑕᒪᓐᓇᐃᓇᑐᐊᖅ ᑭᒡᓕᐊ ᓯᒡᔭᖓᓂ ᑕᐃᒪᖓᓂᑦ ᐊᕐᕌᒍᓂᑦ. ᑕᐃᑲᓂ 2017, ᓄᓇᒥ ᕿᓂᖅᑐᑦ ᖃᐅᔨᓂᐊᕐᒪᑕ ᑎᓯᖕᒋᓐᓂᒃ ᓇᒥ. ᓄᓇᖓ ᐱᓕᕆᔭᐅᓚᐅᖅᑐᖅ ᐊᖕᒋᓪᓕᒋᐊᕋᑕᕐᓂᐊᖅᑐᖅ; ᑕᐃᑲᓂ 2017 ᖃᐅᔨᓴᖅᑕᑐᐊᓯᐅᓚᐅᖅᑕᕗᑦ ᒫᓂᑑᐸ, ᑕᐃᑲᓂ 2018 ᐊᒻᒪᓗ 2019 ᖃᐅᔨᓴᕈᑎᑖᓚᐅᖅᑐᒍᑦ ᐃᓗᑐᐊᖓᓂ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ/ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑭᒡᓕᐊ, 2021 ᖃᐅᔨᓴᕈᑎᑖᓚᐅᖅᑐᒍᑦ 30 ᑭᓛᒥᑕᔅᒧ ᐱᓇᖕᓇᖓ Cape Henrietta Maria ᐊᒻᒪᓗ 2022 ᖃᐅᔨᓴᕈᑎᑖᓚᐅᖅᑐᒍᑦ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓯᒡᓚᓕᒫᖓᓂᒃ ᐋᓐᑎᐅᕆᔫᑦᑐᒥᒃ ᐃᓚᒋᔭᐅᓪᓗᓂ ᐱᓇᖕᓇᖓ ᐃᓚᖓ ᔭᐃᒻᔅ ᐸᐃ ᓯᒡᔭᖓ, ᐊᑭᔅᒥᔅᑭ ᐊᒻᒪᓗ Twin Islands.

ᖃᐅᔨᓴᕈᑎᑖᓚᐅᓐᖏᑦᑐᒍᑦ 2020 ᐱᔾᔪᑎᒋᓪᓗᒍ ᓄᕙᒡᔪᐊᕐᓇᖅ-19.

ᐃᓚᒌᑦ ᓇᓄᐃᑦ ᓇᑭᖕᒑᖅᓯᒪᓂᑐᖃᖏᑦ

ᓄᐊᑦᑎᓚᐅᖅᑐᒍᑦ ᖃᐅᔨᓴᕈᑎᒃᓴᓂᒃ ᓇᓄᕐᓂᑦ ᐱᔭᐅᔪᑦ ᐃᓚᒋᓪᓗᒍ ᐊᑯᓂᐅᔪᒃᑯᑦ ᖃᐅᔨᓴᕈᑎᑦ ᐱᓕᕆᑎᑦᑎᔾᔪᑕᐅᔪᑦ (ᓯᑑᓕᖕ ᐊᓯᖏᓪᓗ. 1999, ᓚᓐ ᐊᓯᖏᓪᓗ. 2016) ᐅᕝᕙᓘᓐᓃᑦ ᐅᖕᒐᓯᒋᔭᒥᑦ ᐊᑐᖅᑐᑦ ᓇᓕᐊᑐᐃᓐᓇᖅ 5cc ᑕᕆᐅᕐᒥᐅᑕᕐᓂᒃ ᓂᕿᖕᒐᓂᑦ ᖃᐅᔨᓴᕈᑖᕐᓂᖅ ᐅᕝᕙᓘᓐᓃᑦ 6cc ᓂᕿᖕᒐᓂᑦ ᖃᐅᔨᓴᕈᑎᖅᑖᖅᖢᑎᒃ ᑲᐱᓪᓗᒍ (ᓄ ᑕᑦ ᒍᓕᐊᒻᔅᐸᐊᑦ, ᐱᓐᓯᕕᓂᐊ, ᔪᓇᐃᑎᑦ ᓯᑕᐃᑦᔅ) ᖁᓕᒥᒎᓕᒃᑯᑦ ᖁᑭᖅᑕᐅᓪᓗᑎᒃ (ᐸᒐᓄ ᐊᓯᖏᓪᓗ. 2014). ᑕᐃᑲᓂ ᖃᐅᔨᓴᕈᑖᕋᓱᒃᖢᑎᒃ, ᖃᐅᔨᓇᓱᖁᔭᐅᓚᐅᖅᑐᒍᑦ ᐊᖑᑎ ᐊᕐᓇᕐᓘᓐᓃᑦ ᐊᒻᒪᓗ ᖃᓄᖅ ᐅᑭᐅᖃᖅᐸ ᐊᖏᓂᖒᒍᑦ ᐊᒻᒪᓗ ᓇᑭᖕᒐᔭᐅᕙᑦ ᖃᓄᕆᑑᓂᖏᑦᑎᒍᑦ. ᐊᑐᓂ ᐋᕿᒃᓯᓚᐅᖅᑕᕗᑦ ᒪᓕᒃᖢᒋᑦ ᐊᑎᒃᑕᖅ ᐊᕐᕌᒍ ᐃᓗᐊᓂᑦ, ᐊᓈᓇᒥᓂᑦ ᐊᒫᒪᒃᑐᖅ, ᐃᓐᓇᖑᓯᔪᑦ (1-4 ᐅᑭᐅᓕᑦ), ᐊᒻᒪᓗ ᐃᓐᓇᐃᑦ (≥ 5 ᐅᑭᐅᓕᑦ).

ᐊᐅᒃ ᐃᓄᐊ ᐋᖅᓯᓚᐅᖅᑐᒍᑦ ᐊᑐᓂ ᓂᕿᖕᒐᓂᑦ ᖃᐅᔨᓴᕈᑖᖅᖢᑕ ᐊᑐᖅᓯᓪᓗᑕ DNEASYᐊᐅᖏᖅᓯᔾᔪᑎ ᐊᒻᒪᓗ ᑕᖏᖕᒐᓂᒃ ᐆᑕᖅᑎᑦᑎᔾᔪᑎ (ᖃᐃᔨᓐ, Hᐃᑕᓐ, ᔮᒪᓂ). (ᐊᑐᓂ ᖃᐅᔨᓴᕈᑖᑦ ᑭᓱᖃᕐᒪᖕᒑᑕ ᑕᐃᑲᓂ 24 ᐊᐅᖏᑦᑎᒍᑦ ᖃᐅᔨᓴᕈᑎᑦ ᐃᓄᐊᒍᑦ ᑕᐃᑲᓂ ᖁᐱᕐᕈᕐᓂᒃ ᖃᐅᔨᓴᕐᕕᒃ ᐆᒪᔪᓂ ᐱᔨᑦᑎᕋᖅᑐᑦ (ᐃᓕᓐᓂᐊᕐᕕᒃᔪᐊᖓ ᐊᐃᐳᑕ, ᐃᒻᒪᑕ, ᐊᐃᐳᑕ). ᐊᐅᖏᑦᑎᒍᑦ ᒪᓕᒃᑕᐅᓂᖕᖓ ᖁᐱᕐᕈᖏᓐᓂᒃ ᐅᑯᐊᓗ; CXX20 ᐊᒻᒪᓗ CXX110 (ᐊᔅᓛᓐᑐ ᐊᓯᖏᓪᓗ. 1993) G1A, G10B, G1D, G10L (ᐸᐃᑦᑲᐅ ᐊᒻᒪᓗ ᓯᑐᓗᐱᒃ 1994) G10C, G10M, G10P, G10X (ᐸᐃᑦᑲᐅ ᐊᓯᖏᓪᓗ. 1995), UarMU05, UarMU10, UarMU23, UarMU26, UarMU50, UarMu51, UarMU59 (ᑕᐳᓕᑦ ᐊᓯᖏᓪᓗ. 1997), G10H, G10J, G10U (ᐸᐃᑦᑲᐅ ᐊᓯᖏᓪᓗ. 1998), MSUT-1, MSUT-2, MSUT-6, MSUT-8 (ᑭᑦᑕHᐃᐅᕋ ᐊᓯᖏᓪᓗ. 2000). ᐊᖏᓐᓇᖅᑐᖅ ᕿᖑᒥᒐᐅᑎ ᐊᖏᒡᓕᒋᐊᓲᖅ ᑎᓴᒪᐃᓪᓗᐊᖅᑐᖅ ᖃᓄᕆᑦᑐᑐᐃᓐᓇᓂᒃ ᓇᓗᓇᐃᖅᓯᓲᖅ ᐊᒻᒪᓗ ᐋᕿᒃᓯᔪᖅ 3 ᐃᓗᓪᓕᖅᓱᖅᓯᒪᖃᑎᒌᒡᖢᑎᒃ ᑖᒃᑯᐊ ᐃᒻᒥᖕᓄᑦ ᐊᑕᔪᑦ ABI 3730 ᑎᒥᐊᓄᑦ ᖃᐅᔨᓴᕈᑎ ᓈᓚᐅᑎᑦ ᐊᐅᖕᒐᓂᑦ ᐃᓄᐊᒍᑦ ᖃᐅᔨᒪᔾᔪᑎᑦ ᐊᔾᔨᒌᓐᖏᑦᑐᑦ (ᐃᓕᓐᓂᐊᕈᑎᑦ ᐆᒪᔪᓕᕆᓂᕐᒥᑦ, ᒍᐊᑦHᐊᒻ, ᒪᓯᑑᓯᑦᔅ, ᔪᓇᐃᑎᑦ ᓯᑕᐃᑦᔅ)). ᐊᖏᓂᖏᑦ ᐊᐅᒃ ᐃᓄᐊ ᑎᒥᐅᒃ ᐋᕿᒃᓯᐃᔨᖕᒐᐊᑕᔪᑦ ᓈᓚᐅᑎᖏᑦ ᑎᒥᐊᓄᑦ ᐊᑐᖅᑕᐅᔪᓐᓇᖅᑐᑦ ᐃᓯᒪᓕᐊᖑᓚᐅᖅᑐᑦ Genescan 500 ᐊᖏᓂᖕ ᐱᐅᓯᖕᒐᓐᓂᒃ ᐊᒻᒪᓗ

ᐊᑐᓂ ᓇᓅᑉ ᐱᖓ ᐊᑎᖃᖅᑐᖅ ᐊᐅᖓᑕ ᐃᓄᐊ ᓇᓗᓇᐃᒃᑯᑕᕆᓪᓗᒍ 3.0 (ᐃᓕᓐᓂᐊᕈᑎᑦ ᑎᒥᐅᑉ ᐊᐅᓚᔾᔪᓯᖓᓂᒃ). ᑖᒃᑯᐊ ᐊᑐᓂ ᓇᓅᑉ ᐊᐅᖏᑦᑕ ᐃᓄᖏᑦ ᐊᑐᖅᑕᐅᓗᑎᒃ ᐲᖅᑕᐅᓚᐅᖅᑐᓂᑦ ᓂᕿᐊᓂᑦ ᖃᐅᔨᓴᕈᑎᑖᕆᔭᐅᓚᐅᖅᑐᑦ ᖃᓅᑎᒋᑦᑕᕐᒪᖌᑕ ᐊᑐᓂ ᓇᓄᖅ ᐊᑕᐅᓯᖅ ᐊᐅᖓ ᑕᐃᑲᖓᑦ ᑭᖑᓂᑦᑎᓐᓂ ᐊᑐᓂ ᖃᓄᕗᑑᓚᐅᕐᓂᖓ ᑕᒪᓐᓇ ᑲᔪᓯᓂᐊᖅᑐᖅ ᐊᑯᓂᐅᔫᒃᑯᑦ ᖃᐅᔨᓴᖅᑕᐅᓗᓂ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (3938) ᐊᒻᒪᓗ ᖃᕆᓴᐅᔭᒃᑯᑦ ᐊᑦᑕᑕᖅᓯᒪᔪᑦ ᐃᓕᑦᑎᓇᓯᒍᑎᑦ ᑕᐃᑲᓂ ᓂᒥᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (864). ᐊᔾᔨᒌᒃᑕᖅᑐᑦ ᐊᑐᓂ ᖃᐅᔨᓴᕈᑎᑦ ᐱᓕᕆᐊᖑᓚᐅᖅᑐᑦ ᐊᐅᖏᑦᑎᒍᑦ ᐃᓄᖏᑦ ᒪᓕᒃᑕᐅᓪᓗᑎᒃ ᓴᓇᕐᕈᑎᖏᑦ ᑲᑎᖓᔪᓂᑦ (ᐸᒃ 2001) ᐅᕝᕙᓘᓐᓃᑦ GenAIEx 6.5 (ᐱᒃᑰᓪ ᐊᒻᒪᓗ ᓯᒪᐅᔅ 2012) ᐊᔪᕐᓇᓚᐅᙱᑦᑐᖅ ᑎᑭᐅᑎᓪᓗᒋᑦ 4ᓄᑦ ᐊᔾᔩᙱᑦᑐᑦ ᐊᑐᓂᒧᑦ ᓇᓗᓇᐃᒃᑯᑦ ᐊᐅᖏᑦᑎᒍᑦ. ᖃᓄᖅ ᐊᔾᔨᒌᒃᑕᕐᓂᐊᕐᒪᖌᑕ ᓴᕿᔮᖅᑐᑦ ᖃᐅᔨᓇᓱᑦᑎᐊᑦᑎᐊᖅᓱᑎᒃ ᐊᒻᒪᓗ ᖁᔭᓈᖅᑕᐅᓪᓗᑎᒃ ᐊᔾᔨᒋᖕᒪᒋᑦ ᑕᐃᒪᓗ ᐊᔾᔨᒋᓐᖏᑕᖏᓐᓂᒃ ᐊᒥᓱᒃᑲᓐᓂᓂᓗ ᐅᖓᑖᓂ 4 ᐊᑐᓂ ᓇᓗᓇᐃᖅᑐᑦ ᐅᓄᓛᖑᓪᓗᑎᒃ ᐊᑕᐅᓯᐅᑦᑕᕐᓂᖏᑦ 2 loci. ᓇᓗᓇᐃᑦᑎᐊᓚᐅᖅᑕᕗᑦ ᓇᓄᐃᑦ ᐃᓚᖏᑦ ᑕᐃᑲᖓᖅᓯᒪᔪᑦ ᐃᓚᒋᔭᐅᔪᑦ ᓯᕗᓪᓕᕐᒥᒃ ᖃᐅᔨᓴᕈᑖᕐᕕᒋᓚᐅᖅᑕᕗᑦ. ᐃᓂᓴᕆᔭᕗᑦ ᐅᓇ ᑎᓕᔭᐅᓯᒪᓂᖅᐳᑦ ᑕᐃᒫᑐᐃᓐᓇᖅᓯᒪᒐᔭᕋᓗᐊᖅᑎᓪᓗᒋᑦ, ᐱᓗᐊᖅᑐᒥᒃ ᖃᓂᒋᔭᖓᓃᑎᓪᓗᒋᑦ ᐃᓚᒋᑦᑕ ᑭᓪᓕᐊᓂ ᑭᓯᐊᓂ ᐃᒃᐱᒋᔭᐅᔪᖅ ᑐᓂᓯᓯᒪᔪᖅ ᑐᑭᓕᐅᕈᑎᒋᓂᐊᖅᑕᓄᑦ ᖃᓅᑎᒋᓇᔭᕐᒪᖌᑕ ᖃᖓᐅᓕᖅᐸᑦ.

ᐃᓗᐊᓂ ᐊᕐᖀᒍ ᐊᔾᔩᖃᑦᑕᓐᖏᑦᑐᑦ ᓇᒧᖌᓯᒪᕕᖏᑦ ᐊᒻᒪᓗ ᑕᕆᐅᖅ ᓯᑯᐊ ᖃᓄᐃᓕᖓᑎᑦᑎᓂᖓ

ᐊᑐᖅᑕᕗᑦ AMSR2 ᖃᖓᑦᑕᖅᑎᑕᐅᓯᒪᔪᑎᒍᑦ ᓴᕿᔮᖅᑐᑦ ᓇᔪᕐᕕᒋᖃᑦᑕᖅᑕᖏᑦ ᑕᕝᕗᓇ 3.5 x 3.5 ᑭᓚᒦᑕᔅ (ᐃᓕᓐᓂᐊᕐᕕᒃᔪᐊᖅ ᐳᓕᒥᓐ, [Index of /amsr2/asi_daygrid_swath/n3125 (uni-bremen.de)](https://seaice.uni-bremen.de/data/amsr2/asi_daygrid_swath/n3125/)) ᖃᐅᔨᓇᓱᑦᑎᐊᕐᓗᒍ ᐊᕐᖀᒍ ᐃᓗᐊᓂ ᐊᔾᔩᖃᑦᑕᓐᖏᑦᑐᑦ ᖃᓄᕗᑑᓂᖏᑦ ᓯᑯᐃᑦ. ᓇᓗᓇᐃᑦᑎᐊᕐᓗᒍ ᐊᒥᐊᒃᑯᕐᓗᐃᑦ ᓯᑯᐃᑦ ᑎᑭᐅᒪᔪᓐᓇᖅᑐᑦ 10% ᐅᑭᐅᒃᑯᑦ ᐊᖏᓛᖅ ᑕᒪᕐᒥᒃ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐃᓚᓕᐅᑎᓯᒪᓇᓂ ᔭᐃᒻᔅ ᐸᐃ. ᓯᑯ ᓇᓗᓇᐃᑦᑎᐊᕐᓗᒍ ᐊᖏᓪᓕᒥᐊᕐᑎᑦᑎᕕᓕᒃ ᓴᕿᔮᕐᓂᖓ ᐊᔾᖑᐊᖓᒍᑦ ᑕᕆᐅᖅ ᓯᑯᖃᕐᓂᖏᑦ ≥ 30%. ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᕕᒃᓱᒍ ᐊᑐᖅᓯᓪᓗᓂ ᕿᑎᐸᓗᐊᓂᑦ ᑕᐃᑲᖓ ᓯᓕᓈᖓᓂᑦ ᓄᕗᐊᓂᑦ ᐃᒃᐱᐊᕐᔪᐊᑕ ᐊᒻᒪᓗ ᓯᑯᑦ ᐊᒥᐊᒃᑯᑦ ᓇᓗᓇᕈᓐᓃᖅᓱᑎᒃ, ᐊᖏᓐᓇᖅᑐᒃᑯᑦ ᐋᕿᒃᓰᑎᓕᒃ, ᑲᔪᓯᓪᓗᑎᒃ ᑲᓇᖕᓇᖓᓄᑦ (0) ᐅᕝᕙᓘᓐᓃᑦ ᐱᓇᖕᓇᖓᓄᑦ (1) ᐊᑐᖅᓯᓪᓗᑕ ᐱᑕᖃᖅᑐᓂᒃ ᐊᖏᓂᖅᓴᐅᔪᓂ ᓄᓇᓂ ᑕᕆᐅᖅ ᓯᑯᐊᓂ ᐅᓪᓗᐊᒍᑦ ᐊᑐᖅᓯᓪᓗᑕ ᓯᑯᒐᓛᖃᓚᐅᕐᓂᖓ.

ᐅᓇ ᑲᓇᖕᓇᖕᒐ/ᐱᓇᖕᓇᖕᒐ ᓯᑯᖃᕐᓂᖕᒐ ᓇᓗᓇᐃᑦᑎᐊᓚᐅᖅᑐᖅ ᐱᔾᔪᑎᒋᓪᓗᒍ ᑭᖑᓂᑦᑎᓐᓂ ᖃᐅᔨᓴᕈᑎᑦ ᑕᑯᑎᑦᑎᓯᒪᔪᑦ ᓯᑯᖃᒪᓛᒃᖄᖕᒐᑦ ᑲᓇᖕᓇᖕᒐᓂ ᐃᒃᐱᐊᕐᔪᐊᑕ ᐃᓐᓇᐃᑦ ᐊᕐᓇᐃᑦ ᓯᖅᔭᖕᒐᓄᐊᖃᑦᑕᖅᑐᑦ ᐅᖕᒐᓯᖕᓂᖅᓴᓄᑦ ᑲᓇᖕᓇᖕᒐᓂ ᐊᔾᔨᒋᖕᒋᑕᖕᒐ ᑕᐃᒪᖕᒐᓂᑦ ᐊᕐᕌᒍᓂ ᓯᑯᒐᓛᖃᖅᓯᒪᓂᖕᒐᓂᑦ ᐱᓇᖕᓇᖕᒐᓂ (ᓯᑑᓕᖕ ᐊᓯᖕᒋᓪᓗ. 1999, ᓯᐅᓕ ᐊᓯᖕᒋᓪᓗ. 2013).

ᖃᐅᔨᓴᕐᓂᐊᖅᓱᒍ ᐃᓗᐊᓂ ᐊᕐᕌᒍ ᐊᔾᔨᒌᖃᑦᑕᖕᒋᓂᖕᒐ ᓇᓄᐃᑦ ᓇᒧᖕᒑᓯᒪᓂᖕᒋᑦ, ᐆᒃᑐᕋᖅᓯᒪᕚᒍᑦ ᓇᔪᖅᐸᒃᑕᑐᖃᕐᒥᖕᓃᖕᒋᑦᑐᑦ ᐅᑯᐊᓗ ᓇᓗᓇᐃᑦᑎᐊᕐᓗᒍ ᑕᐃᒫᒃ ᐅᖕᒐᓯᖕᓂᖕᒐ ᐊᕙᑖᓂᑦ ᐊᑕᐅᓯᖅ ᓇᓄᖅ ᐃᓂᖕᒐ ᑕᐃᑲᓂᑦᑕᐃᓈᖃᑦᑕᖅᑐᖅ ᐊᕐᕌᒍᓂ ᐊᑐᖅᓯᓪᓗᑎᒃ ᐅᖕᒐᓯᒋᒃᑑᑎᒻᒪᕆᐋᓗᐃᑦ. ᐱᔾᔪᑎᒋᓪᓗᒍ ᐊᒥᓱᖕᒋᓂᖕᒋᓐᓄᑦ ᖃᐅᔨᓴᕈᑎᑖᑦ 2017-ᒥᑦ 2019-ᒧᑦ, ᖃᐅᔨᓴᕈᓐᓇᖅᑕᑐᐊᕗᑦ ᓇᔪᖅᐸᒃᑕᑐᖃᕐᒥᖕᓃᖕᒋᑦᑐᑦ ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ. ᑕᐃᒪᓐᓇᐅᕙᓗᐊᖅᑎᓪᓗᒍ, ᐊᖕᒋᔪᑦ ᖃᐅᔨᓴᕈᑎᑖᑦ 2021-ᒥ ᐊᒻᒪᓗ 2022-ᒥ, ᐊᔪᖕᒋᑎᑦᑎᓚᐅᖅᑐᖅ ᐅᕙᑦᑎᓐᓂᒃ ᖃᐅᔨᓇᓱᑦᑎᐊᖅᓱᒋᑦ ᐊᓯᐊᓄᐊᖅᓯᒪᔪᑦ ᑕᒪᕐᒥᒃ ᐅᑭᐅᖕᒋᑦᑎᒍᑦ ᐊᒻᒪᓗ ᐊᖑᑎᑦ ᐊᕐᓇᐃᓪᓗ. ᓇᔪᖅᐸᒃᑕᑐᖃᕐᒥᖕᓃᖕᒋᑦᑐᑦ ᓇᓗᓇᐹᓐᓃᖅᓯᔾᔪᑎᖃᓚᐅᖅᑐᑦ ᐊᑐᖅᓯᓪᓗᑎᒃ ᓈᓴᐅᓯᕆᓪᔪᑎᑦ ᖃᓄᖅ ᐋᕿᖃᑦᑕᕐᒪᖔᑕ ᑐᑭᓯᓂᐊᖅᓱᒍ ᐃᓕᖁᓯᕆᓂᐊᒃᑕᖕᒋᑦ ᓇᒧᖕᒐᐅᕙᒍᓯᖕᒋᑦ. ᐊᔾᔨᒌᖕᒋᓂᖕᒐ ᖃᐅᔨᓇᓱᒃᑕᐅᑦᑎᐊᓕᖅᓱᓂ ᐊᑐᖅᓯᓪᓗᑎᒃ ᐊᑕᐅᓯᕐᒧᐊᖕᒐᔪᖅ ANOVA. ᐊᔾᔨᒌᖕᒋᓂᖕᒋᑦ ᓇᔪᖅᐸᒃᑕᑐᖃᕐᒥᖕᓃᖕᒋᑦᑐᑦ ᐊᕙᑖᓂᑦ ᑖᒃᑯᐊ ᐃᓱᒪᓕᐅᓚᐅᖅᑐᑦ ᐊᑐᖅᓯᓗᑎᒃ ᑕᐃᑲᓃᑦᑐᓈᖅᑎᓪᓗᒋᑦ Tukey HSD ᖃᐅᔨᓴᕈᑎᖕᒋᑦᑎᒍᑦ. ᖃᐅᔨᓇᓱᑦᑎᐊᖅᓱᒋᑦ ᑭᓱᒧᑦ ᑕᕆᐅᖅ ᓯᑯᐊ ᓄᒃᑕᖅᒪᖕᒑᑦ ᑕᐅᕗᖕᒐ ᐊᑐᖅᓯᓚᐅᖅᑐᒍᑦ ᐃᓂᐊᓄᑦ ᐅᑎᖃᑦᑕᕐᓂᖕᒐ ᑲᓇᖕᓇᖕᒐᓄᖕᒐᐅᕗᑦ ᓇᔪᖅᐸᒃᑕᑐᖃᙱᖕᒋᑕᖕᒋᖕᓂᑦᑐᑦ (0) ᐅᕝᕙᓘᓐᓃᑦ ᐱᓇᖕᓇᖕᒐᓄᖕᒐᐅᕗᑦ ᓇᔪᖅᐸᒃᑕᑐᖃᙱᖕᒋᑕᖕᒋᖕᓂᑦᑐᑦ (1) ᐊᑐᖅᓯᖕᒪᑕ ᐊᔾᔨᒌᖕᒋᖅᑐᓂᒃ ᐊᒻᒪᓗ ᓇᓃᓐᓂᖕᒋᑦ ᓯᑯᒐᓛᑦ ᑕᐃᒪᓗ ᓂᕿᒃᓴᖕᒋᑦ ᐊᔾᔨᒌᖕᒋᒻᒪᑕ. ᖃᐅᔨᓴᕈᓯᑦ ᐊᖕᒋᔪᑦ, ᐊᑐᖅᓯᓚᐅᖅᑐᒍᑦ ᑕᐃᒪᐃᒐᔭᕐᓂᖕᒐ - ᐊᖕᒋᓂᖕᒐ ᖃᐅᔨᓴᖅᓯᒪᔪᑦ ᑕᒪᑐᒧᖕᒐ ᑕᐃᒪᐃᒐᔭᓐᖕᒋᓂᖕᒋᑦ ᖃᐅᔨᒪᓪᓗᒋᑦ. ᑭᓯᐊᓂ ᐅᖃᖅᓯᒪᒍᓂ, ᑕᒪᕐᒥᒃ ᓈᓴᐅᓯᕆᓯᒪᔪᑦ ᖃᐅᔨᓴᕈᑎᖕᒋᑦ ᐃᓱᒪᒋᔭᐅᑦᑎᐊᓚᐅᖅᑐᑦ ᐃᒪᓐᓇ ᐊᖕᒋᕚᑎᒋᓂᖕᒐᓂᒃ P≤0.05.

ᑐᑭᓯᓇᖅᓯᔪᑦ ᖃᐅᔨᓴᕈᑎᓂᑦ

ᐱᓚᐅᖅᑐᑦ 727 ᐊᐅᐸ ᐃᓄᐊ ᖃᐅᔨᓴᕈᑎᑖᓂᒃ ᑖᒃᑯᓇᖕᒐᑦ 458 ᐊᔾᔨᒌᖕᒋᑦᑐᑦ ᐊᑐᓐᓂᖅᑐᑦ ᑕᐃᑲᖕᒐᑦ

ᓄᓇ 2 (ᓴᕿᔮᖅᑐᖅ 2) ᑕᐃᑲᓂ 2017-2022 ᐊᒻᒪᓗ 570 ᐊᐅᑉ ᐃᓄᐊ ᖃᐅᔨᓴᕈᑎᑖᓂᒃ ᑖᒃᑯᓇᖓᑦ 514 ᐊᑐᓃᖅᑐᑦ ᑕᐃᑲᖓᑦ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (ᓄᓇ 3) ᑕᐃᑲᓂ 2018-2022. ᐅᓇ ᐊᕐᕌᒍᒥ ᐳᓴᑎᖓ ᑭᖑᓂᑦᑎᓐᓂ ᓂᕕᖓᑖᓕᖅᓯᒪᔪᑦ ᓇᓄᐃᑦ ᑕᐃᑲᓂ ᓄᓇ 2 ᖃᓂᒋᔮᓂᑦ ᑕᒫᖓᑦ 30% ᑎᑭᓪᖢᒍ 43%. ᑕᐃᒪᖓᓂᓕᒫᖅ ᐊᕐᕌᒍᓂ, ᑕᒪᕐᒥᐸᓗᒃ ᓇᓄᐃᑦ ᑕᐃᑲᓃᑦᑐᑦ ᓄᓇ 2 ᐱᓕᕆᐊᖑᓚᐅᖅᑐᖅ ᑖᒃᑯᓄᖓ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (ᖃᓂᒋ.ᖓ 19-28%), ᑕᐃᑲᓂᓗ ᐳᓴᑎᖓ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ ᖃᓂᒋᔮᓂ 11 ᑎᑭᓪᓗᒍ 15% ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᓚᐅᖅᑐᑦ (ᓇᓗᓇᐃᖅᓯᔪᖅ 1). ᑕᐃᑲᓂ ᓄᓇ 2, ᐱᓚᐅᖅᑐᒍᑦ 360 ᓂᕿᖏᓐᓂᑦ ᖃᐅᔨᓴᕈᑎᑖᖅᖢᑕ ᑖᒃᑯᓇᖓᑦ 268 ᐊᑐᓂ ᓇᓄᕐᓂᑦ >1 ᐅᑭᐅᖃᖅᑐᖅ ᐊᕙᑖᓂ 2017 ᐊᒻᒪᓗ 2019 (ᓴᕿᔮᖅᑐᖅ 3). ᑖᒃᑯᓇᖓᑦ, 168 (63%) ᐊᔾᔨᒋᓚᐅᙱᑕᖏᑦ ᑭᖑᓂᑦᑎᓐᓂ ᓂᕕᖓᑖᓕᖕᓂᑦ ᓇᓄᑐᐃᓐᓇᓂᑦ, 72 (27%) ᐊᔾᔨᒌᓚᐅᖅᑐᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ, ᐊᒻᒪᓗ 28 (10%) ᐊᔾᔨᒋᓚᐅᖅᑕᖏᑦ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ (ᓵᓗ, 72% ᐊᒻᒪᓗ 28% ᑭᖑᓂᑦᑎᓐᓂ ᓂᕕᖓᑖᓕᑦ ᓇᓄᐃᑦ ᐅᑯᐊ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ ᐊᑐᓂ). ᓇᒧᖐᓯᒪᓂᖏᑦ ᑭᖑᓂᑦᑎᓐᓂ ᐱᔭᐅᕕᐅᓂᑯᑦ ᐃᓂᖏᑦ (n=221) ᑖᒃᑯᓄᖓ 100 ᓇᓄᐃᑦ ᑕᐃᑲᓃᑦᑐᑦ ᑕᒪᐃᓐᓂ ᓄᓇᖏᓐᓂ, ᑕᐃᒪᓐᓇᐅᒐᓗᐊᖅᑎᓪᓗᒍ, 76% ᐅᕙᓃᓚᐅᖅᑐᑦ ᓄᓇ 1, 17% ᑕᐃᑲᓂ ᓄᓇ 3 ᐊᒻᒪᓗ 7% ᑕᐃᑲᓂ ᓄᓇ 2 (ᓴᕿᔮᖅᑐᖅ 4). ᕿᓕᕈᓕᑦ ᐃᑭᓕᑦ / ᐊᓐᓇᐃᔭᐅᓂᑯᑦ ᐱᓕᕆᐊᖑᓚᐅᖅᑐᖅ ᐊᕐᕌᒍᑕᒫᖅᖢᒋᑦ ᓄᓇ 1 ᑕᐃᒪᖓᓂᑦ 1980, ᑕᐃᒪᓐᓇᐅᒐᓗᐊᖅᑎᓪᓗᒍ, 2009 ᑭᖑᓪᓕᖅᐹᓇᓚᐅᖅᑕᖓᑦ ᕿᓕᕈᓕᑦ ᐃᑭᓕᑦ / ᐊᓐᓇᐃᔭᐅᓂᑯᑦ ᐱᓕᕆᐊᖑᓚᐅᖅᑐᖅ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐃᓚᖓᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (ᕿᓕᕈᖅᑖᕐᓂᑯᑦ ᐊᕙᑖᓂ 2012 ᐊᒻᒪᓗ 2015 ᑕᒫᓂ ᔭᐃᒻᔅ ᐸᐃ ᓯᓪᔭᖓᓂ ᐊᒻᒪᓗ ᐊᑭᒻᒥᖅᑭ ᕿᑭᖅᑕᖅ). ᑖᒃᑯᓇᖒᖅᑐᑦ ᑭᖑᓂᐊᒍᑦ 2017-ᒥᑦ 2019-ᒧᑦ ᖃᐅᔨᓴᕈᑎᑖᑦ ᐃᓚᖃᓚᐅᖅᑐᑦ ᓇᓐᓄᒃᑕᐅᔪᑐᐊᓂᒃ ᐊᕙᑖᓂᑦ 2010 ᐋᕿᒍᑎᓚᐅᖅᑐᖅ 71 (26%) ᐊᑐᓂ ᐊᔾᔨᒋᔭᖏᑦ ᓂᕕᖓᑖᖅᑕᐅᓚᐅᖅᑐᑦ ᓇᓄᐃᑦ ᐊᐅᖏᑦᑎᒍᑦ ᖃᐅᔨᓴᕈᑎᓃᑦᑐᑦ. ᑖᒃᑯᓇᖓᑦ, 43 (16%) ᓇᓗᓇᐃᖅᑕᐅᓚᐅᖅᑐᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ, ᐊᒻᒪᓗ 28 (10%) ᓇᓗᓇᐃᖅᑕᐅᓚᐅᖅᑐᑦ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᑦ (ᓵᕐᓗ 61% ᓂᕕᖓᑖᓕᖅ ᑖᒃᑯᓇᓂ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ 39% ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᑦ).

2021-ᒥ, ᖃᐅᔨᓴᕈᑎᑖᓚᐅᖅᑐᒍᑦ 140 ᓇᓄᐃᑦ ᐊᑐᓂ ᑕᐃᑲᓂ ᓄᓇ 2 >1 ᐊᕐᕌᒍᓕᑦ. ᑖᒃᑯᓕᖓᖅ, 96

(69%) ᐊᔾᔨᒋᓚᐅᖅᑕᖏᑦ ᓇᐃᑦ ᐊᐅᖏᑦᑎᑐᑦ ᖃᐅᔨᓴᖅᓯᒪᔭᖅᑎᓐᓂᑦ (ᐃᓚᒋᔭᐅᓪᓗᑎᒃ ᐅᕕᓂᖏᓐᓂᑦ ᖃᐅᔨᓴᕈᑎᑖᑦ ᑕᐃᑲᓂ 2017-ᒥᑦ 2019-ᒧᑦ; ᓴᕿᔮᖅᑐᖅ 5). 87 (62%) ᑖᒃᑯᐊ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ ᐊᒻᒪᓗ 9 (6%) ᑖᒃᑯᐊ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ ᑕᒪᕐᒥᒃ ᐱᐅᒃᑲᓐᓂᓯᒪᔪᕕᓃᑦ ᑎᑎᕋᖅᓯᒪᔪᑐᖃᑦ ᐃᒻᒪᑲᓪᓚᓂᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ (ᓇᓗᓇᐃᖅᓯᔪᖅ 1, ᓴᕿᔮᖅᑐᖅ 6). 2021-ᒥ, ᓄᐊᑦᑎᓚᐅᕆᕗᒍᑦᑕᐅᖅ 183 ᖃᐅᔨᓴᕈᑎᑖᖅᓱᑕ (102 (55%) ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ, 12 (7%) ᐃᓐᓇᕈᓕᖅᑐᑦ ᐊᖑᑎᑦ, 55 (30%) ᐃᓐᓇᐃᑦ ᐊᕐᓇᐃᑦ ᐊᒻᒪᓗ 14 (8%) ᐃᓐᓇᕈᓕᖅᑐᑦ ᐊᕐᓇᐃᑦ) ᑖᒃᑯᓇᖓᑦ ᐊᑐᓃᖅᓱᒋᑦ ᓇᓄᐃᑦ >1 ᐅᑭᐅᖅᑕᖅᑐᑦ ᑕᐃᑲᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑕᐃᒪᓗ ᑖᒃᑯᐊ 64 (35%) ᐊᔾᔨᒋᓚᐅᖅᑕᖏᑦ ᐊᑐᓂ ᐊᐅᖃᑎᒋᓪᓗᒋᑦ (ᓴᕿᔮᖅᑐᖅ 7) ᑖᒃᑯᓇᖓᑦ 34 (53%) ᐊᔾᔨᒋᓚᐅᖅᑕᖏᑦ ᓂᕕᖓᑖᓕᖅᓯᒪᔪᑦ ᓇᓄᐃᑦ ᐊᒻᒪᓗ 30 (47%) ᐊᔾᔨᒋᓚᐅᖅᑕᖏᑦ ᓂᕕᖓᑖᖅᑲᓐᖏᑦᑐᑦ ᓇᓄᐃᑦ ᑭᖑᓂᑦᑎᓐᓂ ᓂᕿᖏᓐᓂᒃ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᓯᒪᔪᑦ (ᓴᕿᔮᖅᑐᖅ 8). ᑖᒃᑯᓇᖓᑦ 64 ᐊᔾᔨᒌᓚᐅᖅᑐᑦ, 45 (25%) ᓇᓗᓇᐃᖅᑕᐅᓚᐅᖅᑐᑦ ᑕᐃᑲᖔᖅᑐᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ ᐊᒻᒪᓗ 19 (10%) ᑕᐃᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᑦ. ᑖᒃᑯᓇᖓᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᕐᓂᑦ ᑕᐃᑲᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (78%) ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ, 16% ᐃᓐᓇᐃᑦ ᐊᕐᓇᐃᑦ, ᐊᒻᒪᓗ 6% ᐃᓐᓇᕈᓕᖅᑐᑦ. ᑖᒃᑯᓇᖓᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᔪᑦ ᑕᐃᑲᖓᑦ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ, 90% ᑎᖑᓂᑦᑎᓐᓂ ᐱᔭᐅᒃᑲᓐᓂᕐᓂᑯᑦ ᑕᐃᖔᖅᑐᑦ ᓄᓇ 2.

2022-ᒥ ᖃᐅᔨᓴᓚᐅᖅᑐᑦ ᐊᕙᒻᒧᑦ ᓄᒃᑕᖅᑐᓂᒃ ᓇᓄᐃᑦ ᐃᓚᒌᑦ ᕿᓂᖅᓱᑕ ᑭᖑᓂᑦᑎᓐᓂ ᖃᐅᔨᓴᕈᑎᑖᕕᓂᑦᑎᓐᓂᒃ 2021-ᒥ. 2021-ᒥ ᓄᐊᑦᑎᓚᐅᖅᑐᑦ ᓄᐊᑦᑎᓚᐅᖅᑐᑦ ᖃᐅᔨᓴᕈᑎᑖᓂᒃ ᑖᒃᑯᓇᖓᑦ 254 ᓇᓄᕐᓂᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ ᐅᑯᐊᓗ 120 ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᒃᑲᓐᓂᖅᓯᒪᔪᑦ 2022-ᒥ; 111 (93%) ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᒃᑲᓐᓂᖅᓱᑎᒃ ᓇᓄᐃᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ ᐊᒻᒪᓗ 9 (7%) ᑕᐃᑲᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (ᓴᕿᔮᖅᑐᖅ 9). ᖃᐅᔨᓴᕈᑎᑖᓚᐅᖅᑐᑦ 209 (ᐃᓚᒋᔭᐅᓪᓗᑎᒃ ᐃᓅᓴᖅᑐᑦ ᐊᕐᑬᒧᒥ) ᓇᓄᐃᑦ ᑕᐃᑲᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ 2021-ᒥ ᐅᑯᐊᓗ 72 ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᒃᑲᓐᓂᖅᓯᒪᔪᑦ 2022-ᒥ 46 (64%) ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᒃᑲᓐᓂᖅᓯᒪᔪᑦ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ 26 (36%) ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᒃᑲᓐᓂᖅᓯᒪᔪᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ (ᓴᕿᔮᖅᑐᖅ 10). ᑖᒃᑯᓇᖓᑦ ᓇᓄᕐᓂᑦ ᖃᐅᔨᓴᕈᑎᑖᖑᔪᓂᑦ ᑕᐃᑲᖓᑦ ᓂᒋᐊᓂ

ᑕᓯᐅᔭᕐᔪᐊᖅ 2021-ᒥ ᐅᑯᐊᓗ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᒃᑲᓐᓂᖅᓯᒪᔪᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑕᐃᑲᓂ 2022, 62% ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ, 12% ᐃᓐᓇᐃᑦ ᐊᕐᓇᐃᑦ, 12% ᐃᓐᓇᕈᓕᖅᑐᑦ ᐊᖑᑎᑦ ᐊᒻᒪᓗ 15% ᐃᓐᓇᕈᓕᖅᑐᑦ ᐊᕐᓇᐃᑦ. ᑕᒪᕐᒥᒃ ᐊᑐᓂ, ᐅᑯᐊ ᓈᓴᐅᑎᑦ ᓇᓗᓇᐃᖅᓯᒪᔪᑦ ᐱᑕᖃᕐᒪᑦ ᐃᒻᒪᖄ 29% ᓇᓄᖃᒃᑲᓐᓂᖅᑐᖅ ᐊᑭᓐᓇᖅᐸᓯᐊ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑕᐃᑲᓂ 2022 ᐊᔾᔨᒍᓇᓂᐅᒃ 2021-ᒥ. ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ ᐅᓄᕐᓂᖅᓴᐅᓚᐅᖅᑐᑦ ᐅᑭᐅᖏᑦᑎᒍᑦ ᐊᒻᒪᓗ ᐊᖑᑎᑦ ᐊᕐᓇᐃᑦ ᐊᕕᒃᑐᖅᓯᒪᓪᓗᒋᑦ ᓈᓴᖅᑕᓂ ᓇᓄᐃᑦ ᓄᓇ 2 ᑕᐃᑲᓕ ᑕᒪᕐᒥ ᐊᕐᕌᒍᓂ ᐃᒫᖑᑎᒋᔪᖅ 77%, 69%, 67%, 57%, ᐊᒻᒪᓗ 62% ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᔪᓂ 2017-ᒥᑦ 2019-ᒧᑦ, 2021, ᐊᒻᒪᓗ 2022, ᐊᑐᓂ.

ᐃᓗᐊᓂ-ᐊᕐᕉᒍᑕᒫᑦ ᐊᔾᔩᖃᑦᑕᓐᖏᑦᑐᑦ ᓇᒧᖐᓯᒪᓂᖏᑦ ᐊᒻᒪᓗ ᑕᕆᐅᖅ ᓯᑯᐊᑕ ᖃᓄᕆᑑᓂᖏᑦ

ᐱᑕᖃᖅᑐᖅ ᐃᓗᐊᓂ-ᐊᕐᕉᒍᑕᒫᑦ ᐊᔾᔩᖃᑦᑕᓐᖏᑦᑐᑦ ᑕᕆᐅᖅ ᓯᑯᖏᑦ ᖃᓄᕆᑑᓂᖏᑦ. ᑕᐃᑲᓂ 2017, 2019, 2020, ᐊᒻᒪᓗ 2022 ᓯᑯᒐᓛᑦ ᑕᐅᕙᓃᓚᐅᖅᑐᑦ ᐱᓇᖕᓇᖓᓂ, ᐃᒪᐃᒻᒪᑦ 2018 ᐊᒻᒪᓗ 2021 ᑲᓇᖕᓇᖓᓃᓪᓗᑎᒃ (ᓴᕐᑭᔮᖅᑐᖅ 11). ᖃᑦᓯᐅᑦᑕᕐᓂᖏᑦ ᐊᕙᑖᓂᑦ ᐊᔾᔩᓐᖏᑑᑕᐅᔪᑦ ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ ᓇᔪᖅᐸᒃᑕᑐᖃᒥᓃᓐᖏᑦᑐᑦ 82%-ᖑᓚᐅᖅᑐᑦ ᑕᐃᑲᓂ 2017/2018, 84% ᑕᐃᑲᓂ 2018/2019 ᐊᒻᒪᓗ 87% ᑕᐃᑲᓂ 2021/2022. ᑕᐃᑲᓂ 2017/2018 ᑐᑭᖃᖅᑐᖅ ᓇᔪᖅᐸᒃᑕᒥᖕᓃᓐᖏᑦᑐᑦ ᐅᖓᓯᓛᖑᓚᐅᖅᐳᖅ ($\overline{x}$=120 ᑭᓚᒦᑕᔅ, ᖃᓂᒋᔭᖓᓂ 0.04 – 387 ᑭᓚᒦᑕᔅ, n=32), ᒪᓕᒃᑕᐅᓪᓗᓂ 2021/22 ($\overline{x}$=104 ᑭᓚᒦᑕᔅ, ᖃᓂᒋᔭᖓᓂ 0.07 – 411 ᑭᓚᒦᑕᔅ, n=113) ᑖᓐᓇᓗ 2018/2019 ᖃᓂᓛᒧᑦ ($\overline{x}$=71 ᑭᓚᒦᑕᔅ, ᖃᓂᒋᔭᖓᓂ 0.2 -260 ᑭᓚᒦᑕᔅ, n=80) (ᓴᕐᑭᔮᖅᑐᖅ 12). ᐊᖏᔪᒻᒪᕆᐋᓗᒃ ᐊᔾᔩᓐᖏᓂᖓ ᓇᔪᖅᐸᒃᑕᒥᖕᓃᓐᖏᑦᑐᑦ ᐅᖓᓯᒋᔭᖓᓄᐊᖅᑐᑦ ᐃᓐᓇᕐᓄᑦ ᐊᖑᑎᓄᒃ (ᐊᑕᐅᑦᑎᒧᑦ, ANOVA, $F_{2, 222}$ =4.175, P=0.02). ᐊᖏᔪᒻᒪᕆᐋᓗᒃ ᐊᔾᔩᓐᖏᓂᖓ ᓇᔪᖅᐸᒃᑕᒥᖕᓃᓐᖏᑦᑐᑦ ᓇᓂᔭᐅᓚᐅᖅᑐᑦ ᑕᐃᑯᖓ 2017/2018 ᐊᔾᔨᒋᓇᓂᐅᒃ 2018/2019-ᒧᑦ (ᐊᓂᒍᖅᓯᒪᓕᖅᑎᓪᓗᒍ ᑐᑭᐅᑉ HSD ᖃᐅᔨᓴᖅᑕᖓ =0.03) ᐊᒻᒪᓗ ᓇᔪᖅᐸᒃᑕᒥᖕᓃᓐᖏᑦᑐᑦ ᐊᕙᑖᓂ 2018/2019 ᐊᒻᒪᓗ 2021/2022 ᓴᕐᑭᔮᑦᑎᐊᖅᑐᖅ ᐊᔾᔩᓐᖏᓂᖓ (P=0.06).

ᐊᖏᔪᒻᒪᕆᐋᓗᒃ ᐊᔾᔩᓐᖏᓂᖓ ᓇᔪᖅᐸᒃᑕᒥᖕᓃᓐᖏᑦᑐᑦ ᐅᖓᓯᒋᔭᖓᓄᐊᖅᑐᑦ ᐊᕙᑖᓂᑦ ᐅᑭᐅᖃᑎᒌᓐᖏᑦᑐᑦ ($F_{3, 185}$=3.57, P=0.02). ᖃᑦᓯᐅᑦᑕᕐᓂᖏᑦ ᐊᕙᑖᓂᑦ ᐊᔾᔩᓐᖏᑑᑕᐅᔪᑦ

ᓇᔪᖅᐸᒃᑕᒥᖕᓃᓐᖏᑦᑐᑦ ᐊᑐᓂ ᐅᑭᐅᓕᑦ 2021/22 87%-ᖑᓚᐅᖅᑐᖅ ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ, 66% ᐃᓐᓇᐃᑦ ᐊᕐᓇᐃᑦ ᐊᒻᒪᓗ 77% ᑕᒪᕐᒥᒃ ᐃᓐᓇᕈᓕᖅᑐᑦ ᐊᕐᓇᐃᑦ ᐊᒻᒪᓗ ᐊᖑᑎᑦ. ᐅᓇ ᑐᑭᖃᖅᑐᖅ ᓇᔪᖅᐸᒃᑕᓐᖏᓃᓐᖏᑦᑐᑦ ᐅᓄᕐᓂᖅᓴᐅᓚᐅᖅᑐᑦ ᐃᓐᓇᕈᓕᖅᑐᑦ ᐊᕐᓇᐃᑦ, ($\bar{x}$=184ᑭᓚᒦᑕᔅ, ᖃᓂᒋᔭᖕᒐᓂ 15-438 ᑭᓚᒦᑕᔅ, n=20), ᑖᒃᑯᐊᓗ ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ (ᐅᖃᐅᓯᐅᔪᑦ ᖁᓛᓂ) ᑖᒃᑯᐊᖑᓕᓇᓪᓗᑎᒃ ᐃᓐᓇᕈᖅᐸᓪᓕᐊᔪᑦ ᐊᖑᑎᑦ ($\bar{x}$=100 ᑭᓚᒦᑕᔅ,ᖃᓂᒋᔭᖕᒐᓂ 0.27-332 ᑭᓚᒦᑕᔅ, n=29) ᐊᒻᒪᓗ ᐃᓐᓇᐃᑦ ᐊᕐᓇᐃᑦ ($\bar{x}$=80ᑭᓚᒦᑕᔅ, ᖃᓂᒋᔭᖕᒐᓂ 2.7 - 195 ᑭᓚᒦᑕᔅ, n=27) (ᓴᕿᔮᖅᑐᖅ 12). ᐊᓂᒍᖅᓯᒪᓕᖅᑎᓪᓗᒍ ᑑᑭ HSD ᖃᐅᔨᓴᖅᓯᒪᔭᖏᑦ ᑕᑯᑎᑦᑎᓯᒪᔪᑦ ᓇᔪᖅᐸᒃᑕᒥᖕᓃᓐᖏᑦᑐᑦ ᐃᓐᓇᕈᓕᖅᑐᑦ ᐊᖑᑎᑦ ᑖᒃᑯᓄᖕᒐ ᐊᔾᔨᒋᓐᖏᑕᖏᑦ ᐊᕐᓇᐃᑦ ᐊᖏᓂᖅᓴᒥᒃ ᐅᖕᒐᓯᖕᓂᖅᓴᐅᔪᑦ ᑖᒃᑯᓇᖕᒐᑦ ᐃᓐᓇᕐᓂᑦ ᐊᕐᓇᓂᑦ (P=0.02) ᐊᒻᒪᓗ ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ (P=0.01) ᑭᓯᐊᓂ ᐊᔾᔨᒋᓐᖏᑦᑎᐊᖅᑕᖕᒐ ᐃᓐᓇᕈᓕᖅᑐᑦ ᐊᖑᑎᑦ (P=0.07).

ᑭᓯᑐᐃᓐᓇᐃᑦ ᖃᓄᐃᓕᖕᒐᓂᖏᓐᓄᑦ ᐃᓅᓯᕆᕙᒃᑕᖏᑦ ᒪᓕᒃᓱᒋᑦ ᐃᓚᖃᖅᑐᖅ ᓯᑯᒐᓛᑦ ᑕᐃᒪᓗ ᓂᕿᒋᓂᐊᖅᑕᖏᓐᓄᑦ ᐱᐅᓂᖅᓴᐅᖕᒪᑦ ᐱᔾᔪᑎᖃᕋᔭᓚᐅᓐᖏᑦᑐᒥᒃ ᑕᐃᒪᐃᓕᖕᒐᔾᔪᑎᖏᑦ (ᖃᑦᓯᐅᑦᑕᕐᓂᖏᑦ ᐊᕙᑖᓂᑦ ᐊᔾᔩᓐᖏᑑᑕᐅᓂᖏᑦ ᖃᐅᔨᓴᖅᓱᒋᑦ, X^2= 20.80, df = 1, P<0.001). ᐅᓇ ᓂᕿᒋᓂᐊᖅᑕᖏᓐᓄᑦ ᑕᐃᒪᐃᒻᒪᑕᖃᐃᓚᖕᒐᓂᖅ ᓇᔪᖅᐸᑦᑕᓐᖏᓐᓃᔾᔪᑎᔪᑦ = -1.0033 + (1.65115)*ᓯᑯᒐᓛᑦ. ᑐᑭᓯᓇᖅᓯᑎᓯᒪᔪᖅ ᖃᓅᑦᑕᕐᓂᖏᑦᑎᒍᑦ, ᑕᐃᒪᐃᒐᔭᕐᓂᖕᒐᒍᑦ ᑖᒃᑯᐊ ᓇᓄᐃᑦ ᓇᒧᖕᒫᒐᔭᖅᑕᖏᑦ ᓄᒃᑕᖅᓱᑎᒃ ᐱᓇᖕᓇᖕᒐᓄᑦ ᒪᓕᒃᑐᑦ ᓯᑯᒐᓛᑎᒍᑦ ᐱᓇᖕᓇᖕᒐᑕ ᐃᓚᖕᒐᓂ ᐃᒃᐱᐊᕐᔪᐊᓂ ᐃᒪᓐᓇᐅᓚᐅᖅᑐᖅ 5.01x ᐅᓄᕐᓂᖅᓴᑦ (95%CI 2.46 ᑕᕝᕗᖕᒐ 10.92) ᖃᓃᑎᒋᓂᖕᒐ ᓅᑦᑐᓄᑦ ᑲᓇᖕᓇᖕᒐᓄᑦ.

ᐅᖃᖃᑎᒌᒍᑎᓂᑦ

ᑐᑭᓯᓗᒋᑦ ᖃᓄᖅ ᐊᔾᔨᒌᖃᑦᑕᓐᖏᓂᖏᑦ ᑕᕆᐅᖅ ᓯᑯᖏᑦ ᐊᒃᑐᐃᔪᑦ ᓇᒧᖕᒫᖃᑦᑕᕐᓂᖏᓐᓂᒃ ᐊᒻᒪᓗ ᐅᓄᕐᓂᖏᓐᓂᒃ ᓂᕐᔪᑎᑦ ᐆᒪᔪᑦ ᐱᒻᒪᕆᐅᔪᑦ ᓴᐳᒻᒥᒋᐊᓕᑦ ᐊᒻᒪᓗ ᐊᐅᓚᑦᑎᔾᔪᑎᖃᕐᓗᑎᒃ ᓯᓚᐅᑉ ᐅᕐᖂᓯᕚᓪᓕᐊᓂᖕᒐᓄᑦ ᐊᓯᕈᖅᑎᑦᑎᔪᑦ ᑲᔪᓯᔪᒥᒃ ᐊᑐᖅᓯᑎᑦᑎᕗᑦ ᐊᕙᑎᑦᑎᓂᒃ ᐊᓯᕈᖅᑎᑦᑎᓪᓗᑎᒃ ᑕᐃᑲᓂ ᓂᕈᐅᓇᓐᖏᑦᑐᒃᑯᑦ ᓱᑲᓕᔪᒃᑯᑦ (ᒫᓯᐊᔅ-ᕚᐅᕈᐊ ᐊᒻᒪᓗ ᐳᐅᔅᑦ 2018, ᐅᓚᓐᑕᓂᓐ ᐊᓯᖏᓪᓗ. 2022). ᓱᓕ, ᑐᑭᓯᓗᒍ ᓴᖑᓂᖏᑦ ᓇᒧᖕᒫᖃᑦᑕᕐᓂᖏᑦ ᐊᒻᒪᓗ ᐅᓄᕐᓂᖏᑦ

ᐱᒻᒪᕆᐅᔪᒥᒃ ᑕᐃᒪᐃᓕᖓᓕᖅᑐᑦ ᓄᓇᓕᖕᓄᑦ ᐅᑯᐊᓗ ᐊᑐᖅᓯᓲᖑᖕᒪᑕ ᐅᑭᐅᖅᑕᖅᑐᖅ ᐆᒪᔪᖏᓐᓂᒃ ᓂᕿᒃᓴᕆᓪᓗᒋᑦ ᐊᖑᓇᓱᖃᑦᑕᖅᖢᒋᑦ. ᑕᒪᑐᒪᓂ ᐃᓕᑕᐅᓇᓱᒃᑐᒥ, ᓇᓗᓇᐃᖅᓯᕗᒍᑦ ᐃᓚᒋᔭᐅᔪᑦ ᑖᒃᑯᓇᖔᖅᓯᒪᔪᑦ ᓇᓄᕐᓂᑦ ᓯᒡᔭᖓᓂ ᖃᓂᒋᔭᖓᓂ ᐊᑭᓐᓇᖅᐸᓯᐊᑕ ᑕᓯᐅᔭᕐᔪᐊᖅ/ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓄᓇᐃᑦ ᐃᒡᓕᐊᓃᑦᑐᑦ, ᐊᑕᔪᑦ ᓇᒧᖔᓯᒪᓂᖏᑦ ᐊᓯᖑᖃᑦᑕᖅᑐᑦ ᑕᒪᐃᓐᓂ ᑭᒡᓕᐊᓂ ᑕᕆᐅᖅ ᓯᑯᐊ ᑕᐃᒪᐃᓕᖓᓂᖓᓄᑦ, ᐊᒻᒪᓗ ᓇᓗᓇᐃᖅᓯᒪᔪᒍᑦ ᐊᔾᔨᒌᖕᖏᑦᑐᑦ ᓇᔪᖅᐸᒃᑕᒥᖕᓃᖕᖏᑦᑐᑦ ᐊᕙᑖᓂᑦ ᐅᑭᐅᖃᑎᒌᖕᖏᑦᑐᑦ.

ᑕᒪᕐᒥᐸᓗᒃ ᓇᓄᐃᑦ ᑕᐃᑲᓃᑦᑐᑦ ᓄᓇ 2 2017-ᒥᑦ 2022-ᒧᑦ ᑭᖑᓂᑦᑎᓐᓂᑦ ᐱᓕᕆᔭᐅᓚᐅᖅᓯᒪᖕᖏᑦᑐᑦ ᐃᓚᒋᓪᓗᒍ ᖃᐅᔨᓴᕐᑎᑦᑕ ᐊᒻᒪᓗ ᒥᐊᓂᕆᔾᔪᑎᑦᑕ ᐱᓕᕆᑎᑦᑎᔾᔪᑕᐅᔪᑦ. ᐅᑯᐊ ᑭᖑᓂᑦᑎᓐᓂ ᐱᓕᕆᔭᐅᓯᒪᔪᑦ ᐱᔭᐅᖃᑦᑕᖅᖢᑎᒃ ᓇᓄᐃᑦ ᑕᒪᐃᓐᓂᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐃᓚᒌᑦ ᓇᓄᐃᑦ. ᑕᐃᑲᓂ 2017-ᒥᑦ 2019-ᒧᑦ, 28% ᓂᕈᖓᑖᓖᑦ ᓇᓄᐃᑦ ᖃᐅᔨᓴᕐᑎᑖᕐᕕᐅᓚᐅᖅᑐᑦ ᑕᐃᑲᖓᑦ ᓄᓇ 2 ᑖᒃᑯᐊ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ (39% ᑕᐃᒪᓗ ᓈᓴᖅᓯᒪᔪᖃᕐᕕᒃ ᐊᔪᕐᓇᓚᐅᖅᑐᑦ 2009-ᒥᑦ ᐅᕝᕙᓘᓐᓃᑦ ᑭᖑᓂᐊᓂ, ᐅᑯᐊᓗ ᑭᒡᒐᖅᑐᖅᑐᑦ ᐊᕐᖁᒍᓂ ᑕᐃᑲᖓᑦ ᓇᓄᐃᑦ ᓂᕈᖓᑖᖅᑲᓕᖅᖢᑎᒃ ᑕᐃᑲᓂ ᓄᓇ 3) ᐊᔾᔨᒋᖕᖏᑕᖓ 11%-ᑐᐃᓐᓇᖅ ᕿᑎᐊᓂ 1990ᓂ (ᓚᓐ ᐊᓯᖏᓪᓗ. 1997). ᐊᒥᓲᓂᖅᓴᐃᑦ ᑖᔅᓯᒪ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᖅ ᑕᐃᑲᓂ ᓄᓇ 2, ᑲᑎᓪᖢᒋᑦ ᐊᒥᓲᓂᖅᓴᐅᓪᓗᑎᒃ ᓂᕈᖓᑖᖅᑲᖕᖏᑦᑐᑦ ᓇᓄᐃᑦ ᑕᐃᑲᓂ, ᐃᒻᒪᖄᖅ ᐅᓄᖅᓯᓂᖏᓐᓄᑦ ᐃᓚᒋᑦ ᐱᕈᖅᐸᒍᓯᖏᑦᑎᒍᑦ, ᐅᓄᖅᓯᔪᑦ ᑭᓚᒻᒥᐅᑦᑕᖅᑐᑦ ᐊᒻᒪᓗ/ᐅᕝᕙᓘᓐᓃᑦ ᓄᒃᑕᖅᐸᒃᑐᑦ ᑕᐃᑯᖓᑦ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐃᓚᖏᑦ, ᐅᕙᓘᓐᓃᑦ ᑕᒪᕐᒥᒃ. ᐅᑯᐊ ᐃᑲᔪᖅᑕᐅᓂᖅᓴᐅᓚᒥᒃ ᓯᒡᔭᓂᑦ ᐅᓄᕐᓂᖅᓴᐅᕗᑦ ᑕᐃᑲᓂ ᓄᓇ 2 (ᓯᑕᐃᐳᑕᓐ ᐊᓯᖏᓪᓗ. 2014) ᐊᒻᒪᓗ ᓄᒃᑕᖅᐸᒃᑐᑦ ᐱᔾᔪᑎᒋᓪᓗᒍ ᐅᓄᕐᓂᖅᓴᐅᓕᖅᑎᓪᓗᒋᑦ ᓇᓚᐅᑖᖅᓯᒪᔪᑦ ᑖᒃᑯᓄᖓ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (ᓄᐊᑦᑐᓚᑉ ᐊᓯᖏᓪᓗ. 2022).

ᐊᑦᑎᑑᔪᖅ ᑭᖑᓂᑦᑎᓐᓂᑦ ᓂᕈᖓᑖᓕᖕᓂᑦ ᓇᓄᕐᓂᑦ ᑕᐃᑲᓂ ᓄᓇ 2 ᐱᔾᔪᑎᖅᑐᒃᑕᐅᔪᑦ 10-ᐊᕐᕌᒍᓄᑦ ᐱᑕᖃᓚᐅᖕᖏᑦᑐᑦ ᖃᐅᔨᓴᕐᑎᑦ ᑕᒪᑐᒪᓂ ᓄᓇᒥ ᑲᑎᓪᖢᒋᑦ ᐅᓄᖅᑑᓪᓗᐊᖅᑎᓪᓗᒋᑦ ᑕᒫᓂ ᐊᕕᒃᑐᖅᓯᒪᔪᓂ. ᑕᐃᑲᓂ 2017, ᐃᓚᖏᑦ ᐊᒥᓱᑦ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᑦ ᑕᐃᑲᓂ ᓄᓇ 2 ᐅᖓᑖᓃᓚᐅᖅᑐᑦ ᐃᓕᓐᓇᓱᒃᑕᑦᑎᓐᓂᑦ, ᑕᐃᒪᓐᓇᐅᓚᓗᐊᖅᑎᓪᓗᒍ ᖃᐅᔨᓴᕐᑎᑖᕐᕗᑦ ᐊᖏᓂᖏᑦ ᑕᐃᑲᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᓐᓂᒃ ᐊᑦᑎᑑᔪᖅ. ᓚᓐ ᐊᓯᖏᓪᓗ. (1997) ᖃᐅᔨᓴᕐᑎᑖᑦ ᐊᔾᔨᐸᓗᒋᑦ ᓄᓇᖓᓂ (ᓱᕐᓗ ᒫᓂᑑᐸᑐᐊᖅ ᐃᓚᖓ ᓄᓇ 2) ᐊᒻᒪᓗ ᐃᓚᖓᓂ

ᓂᒋᐊᓂ ᑕᓯᐅ.ᕐᔪᐊᖅ ᓇᓂᖕᒋᑦ ᐅᓄᕐᓂᖅᓴᐃᑦ 2017 ᓴᓇᔭᑦᑎᓐᓂᑦ. ᑕᐃᒪᐃᓚᐅᖅᑐᖅ, ᑕᐃᑲᓂ 2017, ᓯᑯᒐᓛᑦ ᐱᑕᖅᑲᖅᑲᑦᑕᓲᑦ ᐱᓇᖕᓇᖅᐸᓯᖕᒐᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ. ᑕᐃᒪᓗ ᑎᓕᔭᐅᓯᒪᕗᒍᑦ ᓇᓄᐃᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖕᒋᑦ ᑕᐃᒪᐃᑎᑕᐅᔪᑦ ᐊᑯᓂᐅᔫᒃᑯᑦ ᖃᐅᔨᓴᖅᑕᐅᓪᓗᑎᒃ ᐅᑯᐊᓗ ᓇᓗᓇᐃᒃᑯᓯᖅᑕᐅᖃᑦᑕᖅᑐᑦ ᓇᓄᐃᑦ ᐊᕐᕌᒍᑕᓖᑦ ᑕᐃᒪᖕᒐᓂᑦ ᐊᓂᒍᖅᑐᑦ 40, ᓄᓇ 2 ᐅᓄᖅᑑᓂᖅᓴᐅᔪᑦ ᓇᒋᐊᓂᑦ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖕᒋᓐᓂᑦ ᑕᐃᒪᖕᒐᓂᑦ ᐊᓂᒍᖅᑐᓂ ᐊᕐᕌᒍᓂ ᓂᕗᖕᒐᑖᓕᖅᓯᒪᓐᖕᒋᒃᑲᓗᐊᕈᑎᑦ ᑕᐃᒪᖕᒐᓂᑦ 2009.

2021 ᐊᒻᒪᓗ 2022, ᑐᑭᓯᓇᖅᓂᖅᓴᐅᓚᐅᖅᑐᑦ ᖃᐅᔨᓴᕈᑎᑖᑦ ᑕᒪᐃᓐᓂᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ. ᐊᒥᓱᓂᒃ ᐊᕐᕌᒍᓂ, 25-36% ᓇᓄᐃᑦ ᖃᐅᔨᓴᕈᖅᑖᕐᕕᐅᓯᒪᔪᑦ ᐊᑕᐅᓯᕐᒥ ᐃᓚᒌᑦ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᒃᑲᓐᓂᖅᓯᒪᔪᑦ ᐊᕐᕌᒍᖕᒍᕐᒪᑦ ᖃᓂᒋᔭᖕᒋᓐᓂᑦ ᐃᓚᒌᑦ ᓇᓄᐃᑦ, ᓇᓗᓇᐃᖅᓯᕗᖅ ᐊᖕᒋᔪᒥᒃ ᐃᓚᒌᖕᓄᑦ ᓇᓄᕐᓄᑦ ᖃᓕᓈᓕᖅᓯᓯᒪᔪᑦ/ᑭᐳᖅᑲᑦᑕᖅᑐᑦ ᖃᓂᒌᔭᓂ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ/ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑭᓪᓕᐊ. ᑕᐃᒪᓗ ᐅᑯᐊ ᑐᑭᓯᓇᖅᓯᔪᑦ ᐊᒻᒪᓗ ᐊᓯᖕᒋᓐᓂᑦ, ᐃᓱᒪᓕᖅᓯᓯᒪᔪᑦ ᑖᒃᑯᐊ ᐊᒥᓲᓕᖅᓴᐅᖕᒪᑕ ᑭᐳᖅᑲᑦᑕᖅᑐᑦ ᐱᔾᔪᑎᒋᓪᓗᒍ ᐊᕐᕌᒍ ᐃᓗᐊᓂ ᐊᔾᔨᒋᖅᑕᓐᖕᒋᒻᒪᒍ ᓇᒧᖕᒦᓂᖕᒋᑦ ᓯᑯᒐᓛᑦ (ᓰᑲᑦ ᐊᒻᒪᓗ ᒫᓯ 2010, ᑕᐅᓐᔅ ᐊᓯᖕᒋᓪᓗ. 2010, ᓯᐅᓕ ᐊᓯᖕᒋᓪᓗ. 2013, ᐅᓇ ᐃᓕᑕᐅᓇᓱᒃᑐᖅ), ᐱᓯᒪᓂᖃᕈᓐᓇᕐᒥᔪᖅ ᐊᓯᕈᖅᐸᓪᓕᐊᔪᑦ ᓇᒦᖅᑲᑦᑕᓕᕐᓂᖕᒋᑦᑎᒍᑦ (ᓚᓐ ᐊᓯᖕᒋᓪᓗ. 2016, ᐊᑦᑭᓐᓴᓐ ᐊᓯᖕᒋᓪᓗ. 2022, ᓄᐊᑦᑐᓚᑉ ᐊᓯᖕᒋᓪᓗ. 2022). ᑕᒪᓐᓇᐅᒐᓗᐊᕈᓂ ᑐᑭᓯᓇᖅᓯᔪᑦ ᖃᐅᔨᓴᕈᑎᓂᑦ ᐃᓱᒪᓕᖅᓯᓯᒪᔪᖅ ᐊᕐᕌᒍ ᐃᓗᐊᓂ ᓄᒃᑕᖅᑲᑦᑕᖅᑐᑦ ᐊᕙᑖᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓄᓇ 2 ᐊᓐᓂᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ, ᖃᑦᓯᐅᓂᖕᒋᑦ ᓯᕗᓪᓕᖅᐹᒥᒃ ᐱᔭᐅᔪᑦ ᑕᐃᑲᖕᒐᑦ ᓄᓇ 2 ᐅᓄᕈᓐᓃᖅᑐᑦ 23% ᐃᓱᓕᑎᓪᓗᒍ ᑕᒪᓇ ᐃᓕᓐᓇᓱᒃᑕᕗᖅ, ᐃᓱᒪᓕᖅᓯᓯᒪᔪᑦ ᖃᓅᑎᒋᓂᖕᒐ ᐅᒃᐱᕆᔭᐅᔪᓂ ᑕᕝᕗᖕᒐ ᓄᓇ 2. ᐃᓱᒪᒋᓪᓗᒋᑦ ᑕᒪᕐᒥᒃ ᓇᓄᐃᑦ ᓂᕗᖕᒐᑖᖃᖕᒋᑦᑐᑦ ᓄᓇ 2, ᐊᒥᓲᓂᖕᒋᑦ ᓇᓄᐃᑦ ᐅᓄᖅᓯᔪᑦ ᑕᐃᑲᓂ ᓄᓇᖕᒐᓂ ᐱᔾᔪᑎᒋᓪᓗᒍ ᐅᓄᖅᓯᓂᖕᒐ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ, ᐃᓱᒪᓕᖅᓯᒪᕗᖅ ᐊᒥᓲᓂᖅᓴᐅᔪᑦ ᓇᓄᐃᑦ ᑕᕝᕙᓂ ᓄᓇ ᐱᔾᔪᑎᒋᓪᓗᒍ ᓄᒃᑕᖅᑐᓂᑦ ᑎᑭᖅᑲᑦᑕᖅᑐᓂᑦ ᑕᐅᕙᖕᒐᑦ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑕᐃᔅᓱᒪᓂ ᑕᕝᕙᖕᒐᑦ ᓄᓇ 1 (ᓯᑕᐃᐳᑕᓐ ᐊᓯᖕᒋᓪᓗ. 2014, ᓄᐊᑦᑐᓚᑉ ᐊᓯᖕᒋᓪᓗ. 2022). ᐃᑲᔪᖅᓱᒃᑲᓐᓂᕐᓗᒍ ᑕᒪᓇ ᐅᒃᐱᕆᔭᖅ, ᓄᐊᑦᑎᓯᒪᕗᒍᑦ ᑖᒃᑯᓇᖕᒐᑦ ᐊᒥᓲᓂᖅᓴᐃᑦ ᓇᓄᐃᑦ ᑕᐃᑲᓂ ᓄᓇ 2 ᐊᕐᕌᒍᑕᓖᑦ 2018-ᒥᑦ 2021-ᒧᑦ ᑕᑯᔭᐅᓯᒪᕗᑦ ᖃᖕᒐᑕᓲᒃᑯᑦ ᓈᓴᖅᑕᐅᓪᓗᑎᒃ ᓯᓪᔭᖕᒐᓂ York Factory ᑕᐅᕗᖕᒐ Fort Severn (ᐅᑯᐊᓗ ᐊᖕᒋᓂᖅᓴᐅᔪᑦ ᓄᓇᖕᒐ) ᑕᐃᑲᖕᒐᑦ 1972 ᑎᑭᓪᓗᒍ 1996

(ᓯᑑᓕᖕ ᐊᓯᖏᓪᓗ. 2004) ᐃᓱᒪᓕᒃᑲᓐᓂᕈᓐᓇᖅᑐᒍᑦ ᐅᓄᖅᓯᕙᓪᓕᐊᔪᑦ ᓇᓄᐃᑦ ᐊᑯᓂᐅᔪᒃᑯᑦ. ᖁᓛᓂ ᑕᑯᔭᑦᑎᓐᓂᑦ ᐃᓱᒪᓕᖅᓯᒪᕗᒍᑦ ᐅᑯᐊ ᖃᑦᓯᐅᓂᖏᑦ ᓇᓄᐃᑦ ᐅᓄᖅᓯᑎᐊᖅᑐᑦ ᖃᓄᖅ ᐊᔾᔩᓐᖏᒻᒪᖔ ᑕᐃᑯᖓ ᓄᓇ 1 ᑐᑭᓯᓇᕋᓂ. ᐅᑯᐊ ᓇᓂᔭᐅᔪᑦ ᐱᒪᕆᐅᔪᒥᒃ ᑕᐃᒪᐃᑎᑦᑎᔪᑦ ᐊᖑᓇᓱᒃᑕᐅᔪᓐᓇᖅᒪᖔᑕ ᐊᐅᓚᑕᐅᓗᑎᒃ ᐱᔾᔪᑎᒋᓪᓗᒍ ᓄᓇ 2 ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐅᓄᖅᓯᕙᓪᓕᐊᖕᒪᑕ ᓇᒧᑐᐃᓐᓈᖅᐸᓪᓕᐊᔪᑦ, ᑕᐃᒪᓗ ᐅᓄᓗᐊᓕᖅᐸᑕ ᓇᓄᐃᑦ ᐃᒻᒪᖄ ᓄᒃᑕᕈᓐᓇᖅᑐᑦ ᐊᕙᑖᓂᑦ ᐃᓚᒋᓐᓂᑦ ᐊᖄᒍᑕᓖᑦ. ᓱᓕ, ᐱᔾᔪᑎᒋᓪᓗᒍ ᐅᓄᖅᓯᓂᖏᑦ ᓈᓚᐅᑖᖅᓯᒪᔪᑦ ᑕᒪᐃᓐᓄᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᒫᓐᓇ ᐱᔭᐅᓯᒪᔪᓂᑦ ᖃᖓᑕᓲᒃᑯᑦ ᓈᓴᖅᑕᐅᓯᒪᔪᓂᑦ ᑕᐃᒪᓗ ᐃᓱᒪᓇᖅᑐᖅ ᑖᒃᑯᐊ ᑕᒪᕐᒥᒃ ᓇᓄᐃᑦ ᓈᓴᖅᑕᐅᓚᐅᖅᑐᑦ ᐃᓚᒌᓄᑦ ᐅᑯᐊᓗ ᑕᑯᔭᐅᓯᒪᔪᑦ, ᕿᓚᒥ ᐅᐸᒃᓯᓯᒪᓐᓂᖅᑎᓪᓗᒋᑦ ᐊᓯᕈᖅᑐ ᑕᒪᐃᓐᓂ ᐃᓚᒌᓂ ᑭᒡᓕᖏᓐᓂ ᐅᓄᕈᓐᓃᖅᑐᑦ ᐅᕝᕙᓘᓐᓃᑦ ᐅᓄᖅᓯᑎᐊᖅᑐᑦ ᑖᒃᑯᐊ ᓇᓚᐅᑖᖅᓯᒪᔪᑦ ᐊᒻᒪᓗ ᓇᓐᓄᒃᑕᐅᓇᓱᒍᓐᓇᖅᑐᑦ ᑖᒃᑯᑎᒍᑦ ᐋᖅᑭᒃᑕᐅᖃᑦᑕᖅᒪᑕ.

ᑕᐃᑲᓂᓕᒫᖅ ᐃᓕᑦᑎᓇᓱᒃᑎᓪᓗᑕ, ᐊᔾᔩᓕᕈᓐᓇᓚᐅᓐᖏᑦᑐᑦ ᐊᕙᑖᓂᑦ-ᐊᖄᒍᒥ ᑕᐃᒪᓐᓇᐅᕙᓐᓂᖓ ᑕᕆᐅᖅ ᓯᑯᐊ. ᓇᓂᓯᓚᐅᖅᑐᒍᑦ ᐅᑯᐊ ᓇᓄᐃᑦ ᓴᖑᔪᑦ ᓯᒡᔭᑮᓕᖅᑐᑦ ᒪᓕᑦᑎᐊᖅᑐᑦ ᖃᓄᖅ ᓯᑯᒐᓛᑦ ᐱᑕᖃᖅᒪᖔᑕ ᐱᓇᖕᓇᖓᓂ ᐅᕝᕙᓘᓐᓃᑦ ᑲᓇᖕᓇᖓᓂ ᐃᒃᐱᐊᕐᔪᐊᑕ. ᑕᐃᒪᓗ ᑭᖑᓂᑦᑎᓐᓂ ᖃᐅᔨᓴᖅᑕᐅᓯᒪᔪᑦ ᐃᑲᔪᖅᑐᑦ ᓇᓄᕐᓂᒃ ᑭᒡᓕᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ. (ᓯᑑᓕᖕ ᐊᓯᖏᓪᓗ. 1977, ᑐᓚᐅᓱ ᐊᒻᒪᓗ ᓯᑑᓕᖕ 1990, ᐲᑳᒃ ᐊᓯᖏᓪᓗ. 2010, ᐊᑉᐹᑦ ᐊᒻᒪᓗ ᒥᑦᑎᐅ 2012), ᐅᕙᒍᑦ ᑐᑭᓯᓇᖅᓯᔪᑦ ᖃᐅᔨᓴᕈᑎᓂᑦ ᓇᓗᓇᐃᖅᓯᓚᐅᖅᑐᑦ ᑖᒃᑯᐊ ᑕᐃᒪᐃᑎᑦᑎᖕᒪᑕ ᓯᑯᐃᑦ ᖃᓄᐃᓕᖓᔭᕌᖓᒥᒃ ᓇᓄᐃᑦ ᓇᒧᖓᐅᕕᒋᓕᖕᖏᖅ, ᐃᓚᖏᓐᓂ ᐊᖄᒍᓂ, ᐋᒻᒪᑦᑎᐊᖅᓗᑎᒃ ᑖᒃᑯᓄᖓ ᓴᖑᓂᖓ ᐊᓄᖅᓂᖏᓐᓄᒃ ᓇᓚᐅᑖᖅᓯᒪᔪᑦ ᐅᓄᖅᓯᕗᑦ ᐅᕝᕙᓘᓐᓃᑦ ᐊᑦᑎᒃᓯᕗᑦ ᒪᓕᒃᑲᐅᑎᓐᓂ ᓄᒃᑕᖅᓯᓂᖅᐸᖕᒥᑦᑎᒍᑦ. ᐆᒃᑑᑎᒋᓪᓗᒍ , 2021-ᒥ, ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᖃᖓᑕᓲᒃᑯᑦ ᓈᓴᖅᓯᒪᔪᓂᒃ ᖃᖓᑕᕐᓗᑎᒃ ᑕᐃᑲᓂ ᓯᑯᒐᓛᒃᑯᑦ ᑲᓇᖕᓇᖓᓃᓚᐅᖅᑐᑦ ᐊᒻᒪᓗ ᑎᑎᕋᖅᑕᐅᓚᐅᖅᑐᑦ ᐊᓯᐊᓄᐊᖅᓂᖓᓂᑦ ᑕᐅᕙᖓᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑕᐅᕗᖓ ᓂᒋᐊᓄᑦ ᑕᓯᐅᔭᕐᔪᐊᖅ. ᑕᒪᓐᓇ ᓴᖑᓂᖓ ᐃᓗᐊᓃᓪᓗᐊᑕᖅᑐᖅ 200 ᑭᓚᒦᑕᔅ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ/ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑭᒡᓕᐊ ᐊᒻᒪᓗ ᐊᒥᓲᓐᓈᖏᑦᑐᑦ ᓇᓄᐃᑦ ᓇᓗᓇᐃᖅᑕᐅᓚᐅᖅᑐᑦ ᑕᐃᑲᖓᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐅᖓᓯᓐᓂᖅᐸᐅᓂᖏᓂᒃ ᑕᐅᕙᖓᑲᓐᓂᖅ.

ᐅᓄᓛᑦᑎᐊᖏᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ ᓇᓂᔭᐅᖃᑦᑕᖅᑐᑦ ᑕᐃᑲᓂ ᓂᕿᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᓵᓚᐅᖅᑐᖅ ᓄᓇ 2. ᑕᐃᑲᓂ 2022 ᑕᐃᒪᓗ ᓯᑯᒐᓛᓕᕐᒪᑦ ᐱᓇᖕᓇᖕᒐᓂ ᐊᒻᒪᓗ ᑎᑎᕋᖅᓯᓚᐅᖅᑐᒍᑦ 36% ᓇᓄᐃᑦ ᑕᐃᑲᓂ ᓯᑯᒐᓛᑦ ᓂᕿᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ 2021-ᒥ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᒃᑲᓐᓂᓚᐅᖅᑐᑦ 2022-ᒥ ᐅᑯᐊ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ. ᑲᒪᓇᓚᐅᖅᑐᖅ ᓇᓂᓯᓚᐅᓐᖏᓐᓇᑦᑕ ᐃᓐᓇᕐᓂᒃ ᐊᖑᑎᓂᒃ ᓇᔪᖅᐸᒃᑕᒥᖕᓃᓐᖏᑦᑐᑦ ᐊᓯᖏᑦ ᑭᓯᐊᓂ ᐅᑭᐅᖃᑎᖏᑦ ᐊᒻᒪᓗ ᐊᕐᓇᐃᑦ ᐊᕙᑖᓂᑦ 2021 ᐊᒻᒪᓗ 2022 ᐱᑕᖃᓐᖏᒃᑲᓗᐊᕐᒪᑕ ᑭᒡᒐᖅᑐᐃᓯᒪᔪᑦ ᐊᒥᓲᓚᓂᒃ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᓐᓂᑦ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᔪᑦ ᑕᐃᑲᓃᑦᑐᑦ ᓂᕿᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ. ᐃᓐᓇᕈᓕᖅᑐᑦ ᐊᕐᓇᐃᑦ ᐊᒥᓱᑦ ᔭᖅᐸᒃᑕᒥᖕᓃᓐᖏᑦᑐᑦ ᐅᖓᓯᒃᓯᒥᖕᓂ ᐊᔾᔨᒋᓐᖏᑕᖕᒐ ᖃᓅᓂᖕᒐ ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ ᐊᒻᒪᓗ ᐃᓐᓇᐃᑦ ᐊᕐᓇᐃᑦ ᑭᓯᐊᓂ ᖃᐅᔨᓇᓱᒃᓯᒪᓐᖏᑦᑐᒍᑦ ᖃᓃᑎᒋᖕᒪᖔᑕ ᐃᓐᓇᕈᓕᖅᑐᑦ ᐊᖑᑎᓄᑦ. ᑐᓚᐅᓯ ᐊᒻᒪᓗ ᓯᑑᓕᖕ (1990) ᓇᓂᓯᓚᐅᖅᑐᑦ ᐃᓐᓇᕈᓕᖅᑐᑦ ᐊᕐᓇᐃᑦ ᓄᒃᑕᒃᑲᐅᓂᖅᓴᐅᔪᑦ ᐊᓯᖏᓐᓂᑦ ᓇᓄᕐᓂᑦ ᖃᓄᑐᐃᓐᓇᖅ ᐊᖑᑕᐅᒐᓗᐊᕈᑎ ᐃᓐᓇᕈᖅᐸᓪᓕᐊᒐᓗᐊᕈᑎᒃ (ᐊᓯᖏᑦ ᑕᐃᑲᓃᖏᓐᓇᖅᑐᓂᑦ ᐊᕐᓇᓂᑦ) ᐊᒻᒪᓗ ᑕᐃᒫᒃᑕᐅᖅ ᐅᓄᕐᓂᖅᓴᐅᔪᑦ ᐊᑯᓚᐃᑦᑐᒥᒃ ᓇᔪᖅᐸᒃᑕᒥᖕᓃᓐᖏᑦᑐᑦ ᐅᖓᑖᓄᐊᖃᑦᑕᖅᑐᑦ 150 ᑭᓚᒦᑕᕐ ᐱᓂᖅᓴᐅᔪᑦ ᐊᓯᖏᓐᓂᑦ ᑕᒪᕐᒥᒃ ᐅᑭᐅᖃᑎᒋᓐᖏᑕᖏᑦ ᐊᒻᒪᓗ ᐊᖑᑎᑦ ᐃᓐᓇᕈᓕᖅᑐᓂᓪᓗ.

ᓇᓂᓴᑦᑎᓐᓂᑦ ᐅᓄᕐᓂᖅᓴᐅᓚᐅᖅᑐᑦ ᓂᕿᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᑦ ᑖᒃᑯᐊᓗ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᑦ ᐃᓚᖏᓐᓂ ᐊᕐᕌᒍᓂ ᐊᓯᖏᑦ ᐱᑕᖃᕈᓐᓇᕐᓂᖏᑕ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᔪᑦ ᐊᖏᓂᖅᓴᐅᓂᖓ ᐊᓯᕈᖅᑕᖃᑦᑕᕐᓂᖏᑦᑕ ᓄᒃᑕᖅᑐᖅ/ᑎᑭᑦᑐᓄᑦ ᑕᐃᒪᓐᓇᐅᓂᖅᓴᐅᓕᖅᑐᑦ ᑭᖑᓂᑦᑎᓐᓂ ᖁᓕᓂᑦ ᐊᕐᕌᒍᓂ (ᓚᓐ ᐊᓯᖏᓪᓗ. 1997). ᑕᐃᒪᓐᓇ ᐱᔪᑎᖃᕐᓂᖓᓄᑦ ᖃᐅᔨᒪᓇᖏᑦᑐᖅ ᑭᓯᐊᓂ ᐊᑕᔪᓇᖅᑐᑦ ᐊᖏᔫᓂᖓᓂ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᖏᓐᓇᖅᑐᑦ, ᐊᓯᕈᖅᑕᓕᑦ ᖃᓄᓇᐅᓂᖏᑦ ᑕᓇᐅᖅ ᓯᑯᐊ, ᐊᓯᐅᖅᑎᑕᐅᒃᐸᑦ ᐃᓂᒋᔭᖏᑦ ᐊᑐᖅᐸᒃᑕᖏᑦ, ᐊᒡᒍᕆᔪᓈᕐᒪᕆᑦ ᑕᒫᓃᐸᐸᓕᖅᑐᑦ ᐊᒻᒪᓗ ᓇᒧᖕᒐᓯᖏᑦ ᓴᖑᔪᑦ ᓇᓄᐃᑦ ᐱᔾᔪᑎᒋᓪᓗᒍ ᓯᑯᖃᕐᒋᓂᑯᖓᓄᑦ (ᑕᐅᓐᔅ ᐊᓯᖏᓪᓗ. 2010; ᒥᒃᑳᓪ ᐊᓯᖏᓪᓗ. 2015, ᓄᐊᑦᑐᓚᐸ ᐊᓯᖏᓪᓗ. 2022). ᐃᒻᒪᖄ, ᓱᕋᑦᑎᓂᖓ ᖃᐅᔨᒪᓇᖏᑦᑐᒥᒃ ᓯᓚᐅᑉ ᖃᓄᐃᓂᖓᒍᑦ ᑕᐃᒪᐃᑦᑎᔪᑦ ᓇᓄᐃᑦ ᓇᒧᖕᒐᖃᑦᑕᕐᓂᖏᑦ. ᐆᒃᑑᑎᒋᓗᒍ, ᐊᓯᕈᖅ ᑭᖑᕙᕐᓯᒪᓯᐅᓐᓇᑎᒃ ᓯᑯᐃᔭᖅᑦᑕᖅᑐᑦ ᐊᑐᐃᔪᓇᖅᑐᑦ ᓇᒧᖕᒐᓯᒪᓂᖏᓂᒃ ᓇᓄᐃᑦ ᑕᐃᒪᓗ ᖃᖓᔅ ᑎᑭᑦᑕᖅᐸᑕ ᓯᒪᔭᓄᐊᖅᐸᑕ ᐊᒻᒪᓗ ᑎᑭᓚᐅᖏᓗᑎᒃ ᐅᐸᒍᒪᔭᒥᖕᓄᑦ ᐊᐅᔭᕝᕕᓱᒥᖕᓄᑦ ᓄᓇᒥ (ᓯᑑᓕᖕ ᐊᓯᖏᓪᓗ.

2004). ᐆᒃᑑᑎᒋᓪᓗᒍ, ᐊᕐᕌᒍᑦ ᓱᑯᐃᕐᓇᕌᕐᓂᕌᖓᑦ ᐊᒃᑐᐃᔪᓐᓇᖅᑰᖅᑐᑦ ᓇᓄᕐᓂᒃ ᓇᒧᖕᒑᓯᒪᓂᖏᓐᓂᒃ ᑕᐃᒪᓗ ᒪᓐᓇᑖᖅ ᓯᒻᔭᒧᐊᖅᑐᑦ ᐊᒻᒪᓗ ᓱᓕ ᑎᑭᓐᖏᑦᑐᑦ ᐊᐅᔭᕐᕕᒋᔪᒪᔭᕐᒥᖕᓄᑦ ᓄᓇᒧᑦ (ᓯᑑᓕᖕ ᐊᓯᖏᓪᓗ. 2004). ᑐᓚᐅᓯ ᐊᓯᖏᓪᓗ. (2004) ᐃᓱᒪᓕᖅᓯᓯᒪᔪᖅ ᐅᑯᐊ ᑲᑎᙵᐅᓕᖅᑐᑦ ᐃᒻᒥᖕᓄᑦ ᐃᓚᒌᑦ ᐅᓄᖅᓯᔪᓐᓇᖅᑐᑦ ᐊᓯᕈᖅᑐᓄᑦ ᐱᔾᔪᑎᒋᓪᓗᒍ ᑕᕆᐅᖅ ᓯᑯᐊ ᓇᒧᖕᒑᓯᒪᓂᖓ. ᓇᓂᔭᕗᑦ ᐃᑲᔪᖅᑐᑦ ᑕᒪᑐᒥᖓ ᑕᐃᒪᓐᓇᐅᓕᐊᕋᓯᒋᓚᐅᖅᑕᑦᑎᓐᓂᒃ. ᓱᑯᐃᔭᕌᖓᑦ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓱᑯᐃᖅᓵᓕᓪᓗᓂ (ᓯᑑᓐ ᐊᒻᒪᓗ ᓚᐃᑐᓕ 2016), ᐊᒻᒪᓗ ᓇᓄᐃᑦ ᓯᒻᔭᒃᑯᑦ ᑎᑭᖅᑲᑦᑕᖅᑐᑦ ᓱᑯᖃᑦᑎᐊᓐᖏᑎᓪᓗᒍ ᓕᖕ ᐊᓯᖏᓪᓗ. 1999). ᑕᐃᒪᓐᓇᐅᒐᓗᐊᕐᒪᑦ, ᓇᓄᐃᑦ ᓵᑦᑎᓯᒪᓕᕈᓐᓇᖅᑐᑦ ᐊᓯᒥᐅᑕᒥᖕᓂᒃ ᑎᑭᐅᕋᖅᑐᑦ ᐅᑯᐊᓗ ᖁᐃᓂᖏᓐᓂᖅᓴᐃᑦ ᑭᓯᐊᓂ ᐊᔾᔨᐸᓗᖏᑦ ᑖᒃᑯᐊ ᓄᓇᐃᑦ ᐅᕝᕙᓘᓐᓃᑦ ᐊᔾᔨᐸᓗᖏᑦ ᓯᖃᓐᖏᓂᖓᓄᑦ ᖁᐃᒃᑎᑦᑐᓐᓇᐃᓕᔪᑦ ᑭᓯᐊᓂ ᓄᓇᒧᐊᖃᑦᑕᓕᖅᑐᑦ ᓯᒻᔭᒃᑯᑦ ᐊᓯᐊᓄᑦ.

ᑕᐃᑲᓂ 2021 ᖃᖓᑕᓲᒃᑯᑦ ᖃᐅᔨᓴᖅᑕᐅᔪᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ 27% ᓄᖑᐹᓪᓕᖅᓯᒪᓚᐅᖅᑐᑦ ᑕᐃᑲᖓᑦ 2016 ᓇᓚᐅᑖᖅᓯᒪᔪᓂᑦ ᐅᑯᐊᓗ ᑕᐃᒪᓐᓇᐅᔪᑦ ᐅᓄᓐᖏᓂᖅᓴᐅᖕᒪᑕ ᐃᓐᓇᐃᑦ ᐊᕐᓇᐃᑦ ᐊᒻᒪᓗ ᐃᓐᓇᕈᓕᖅᑐᑦ (ᐊᑉᑭᓐᓴᓐ ᐊᓯᖏᓪᓗ. 2022). ᓇᓂᓯᓚᐅᖅᑐᒍᑦ ᑕᑯᑎᑕᐅᓪᓗᑕ ᕿᓚᒥ ᐊᐅᓪᓚᖅᓯᒪᓚᐅᒃᑐᑦ ᑕᐃᑲᖓ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ 2021-ᒥ ᐱᔾᔪᑎᒋᓪᓗᒍ ᐊᓯᕈᕐᓂᖏᓐᓄᑦ ᓇᓄᐃᑦ ᐅᑎᖅᑐᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒧᑦ ᑕᐃᑲᓂ 2022. ᓈᓴᖅᓱᕆᑦ ᕿᓚᒥ ᑎᑭᑉᐸᒃᑐᑦ/ᐊᐅᓪᓚᖅᐸᒃᑐᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ ᑕᐃᑲᓂ 2022, ᐃᓕᓐᓇᓱᒃᑕᕗᑦ ᐃᓱᒪᓕᖅᓯᓯᒪᔪᑦ ᑖᒃᑯᐊ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ ᐅᓄᖅᓯᕆᐊᕋᔭᙳᐊᖅᑐᑦ 29% ᓄᒃᑕᖅᑕᖏᓐᓂᑦ ᑖᒃᑯᐊᑐᐊᖅ ᑕᐃᒪᓗ ᐊᔾᔨᑎᐊᕆᔭᖓ ᐊᓯᕈᖅᑐᓄᑦ ᐅᓄᕐᓂᖏᓐᓂᒃ ᑎᑎᕋᖅᓯᒪᔪᓂᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (27%). ᐊᒻᒪᓗᒃᑲᓐᓂᖅ, ᑕᐃᑲᓂ ᑲᑎᓪᓗᒋᑦ ᓇᓚᐅᑖᓯᒪᔪᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑕᐃᑲᓂ 2016 ᖃᓅᑎᒋᖕᒪᖔᑕ ᑖᒃᑯᓇᖓᑦ 2021-ᒧᑦ, ᐊᓯᕈᖅᑐᖃᓐᖏᑦᑐᖅ ᐅᓄᕐᓂᖏᓐᓂᒃ (ᐊᑉᑭᓐᓴᓐ ᐊᓯᖏᓪᓗ. 2022). ᑕᐃᒪᓗ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ ᑎᑎᕋᖅᑕᐅᓯᒪᓪᓗᑎᒃ ᑕᐃᑲᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ 2021-ᒥ ᑖᒃᑯᐊᑐᐊᓪᓚᐅᑕᐅᓚᐅᖅᑐᑦ ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ, ᐃᓕᓐᓇᓱᒃᑕᑦᑎᓐᓂ ᓴᓇᓯᒪᓂᖓ ᓇᓂᓱᒃᑲᓐᓂᕈᓐᓇᕋᔭᓚᐅᖅᑐᑦ ᐃᓐᓇᕐᓂᒃ ᐊᖑᑎᓂᒃ ᐊᐅᓪᓗᑎᓗᕆᑦ ᓯᒻᔭᖏᑦ ᓂᒋᐊᑕ ᑕᓯᐅᔭᕐᔪᐊᖅ. ᐃᓕᓐᓇᓱᒃᑕᕗᑦ ᖃᐅᔨᓚᐅᓐᖏᑦᑐᑦ ᐅᓄᕐᓂᖅᓴᐅᖕᒪᖔᑕ ᓇᔪᖅᐸᒃᑕᒥᖕᓃᓐᖏᑦᑐᑦ ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ ᖃᓅᑎᒋᓂᖏᑦ ᐊᓯᖏᓂᑦ ᐅᑭᐅᖃᑎᒥᖕᓂᒃ ᐊᒻᒪᓗ ᓇᓂᓯᓚᐅᖅᑐᒍᑦ ᑲᒪᓇᖅᑐᒥᒃ ᐅᓄᖅᑐᐊᓘᖕᒪᑕ ᓇᔪᖅᐸᒃᑕᒥᖕᓃᓐᖏᑦᑐᑦ ᐃᓐᓇᕈᓕᖅᑐᓄᑦ

ᐊᕐᓇᓄᑦ. ᑕᑯᓪᓗᒍ ᑖᓐᓇ ᓄᓇ 2 ᑖᒃᑯᐊᑦᑕᐃᓐᓇᓪᓗᐊᑕᐅᖕᒪᑕ ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ, ᑕᐃᒪᓗ ᐃᓐᓇᖅᑕᕐᓂᖅᓴᐅᓚᐅᖅᑐᑦ ᐊᑯᑎᓂᒃ ᑕᐃᒪᖓᓂᑦ 2017 ᐊᒻᒪᓗ ᑕᐃᒪᐃᒻᒪᑦ ᓇᓂᓯᒃᑲᓐᓂᕐᓂᐊᖅᑐᑦ ᑖᒃᑯᐊ ᐅᑭᐅᓂᑦ ᐊᒻᒪᓗ ᐊᖑᑎᑦ ᐊᕐᓇᓗ. ᑕᐃᒪᓐᓇᐅᒐᓗᐊᕐᒪᑦ, 16% ᑖᒃᑯᐊᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ ᓇᓗᓇᐃᖅᓯᒪᔪᑦ ᑕᐃᑲᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ 2021-ᒥ ᐃᓐᓇᐃᑦ ᐊᕐᓇᐃᑦ ᖃᐅᔨᓴᕈᑎᑖᕋᓯᒃᑲᓗᐊᖅᑎᓪᓗᑕ ᓯᒡᑐᐊᖓᓂᑦ, ᐅᓄᕐᓂᖅᓴᐅᖏᓐᓇᔭᓚᐅᖅᑐᑦ ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ. ᐊᔾᔨᒌᓐᖏᓂᖏᑦ ᓄᓇᖃᑎᒌᓐᖏᑦᑐᑦ ᑎᑎᕋᖅᑕᐅᓚᐅᖅᑐᖅ ᐊᕙᑖᓂᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᐅᓄᕈᓐᓃᖅᓯᒪᔪᑦ ᑎᑎᕋᖅᑕᐅᓚᐅᖅᑐᑦ ᑕᐃᑲᓂᓪᓗᐊᑕᖅ ᓄᓇ 1 ᐃᓯᒪᓂᖅᓯᓯᒪᔪᖅ ᐅᓄᕈᓐᓃᓂᕐᓂᖏᓐᓂᒃ ᓇᓄᐃᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ ᐊᒻᒪᓗ ᐅᓄᖅᓯᓪᓗᑎᒃ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑲᑎᖓᓪᓗᑎᒃ ᑎᑭᓚᐅᑲᒃᓯᒪᔪᑦ/ᐊᐅᓪᓚᖅᐸᓪᓕᐊᔪᑦ ᑕᐃᒫᒃ ᐊᒥᓲᓐᖑᓗᐊᕐᑰᔮᕗᑦ ᓇᓚᐅᑖᖅᓯᒪᔪᑦ ᑖᒃᑯᓄᖓ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ ᐊᒻᒪᓗ ᐅᒥᓯᕈᖅᓯᒪᓂᕐᒪᑕ ᓇᓚᐅᑖᖅᓯᒪᔪᓂᑦ ᑖᒃᑯᐊ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (ᐊᑦᑭᓐᓴᓐ ᐊᓯᖏᓪᓗ. 2022, ᓄᐊᑦᑐᓚᑉ ᐊᓯᖏᓪᓗ. 2022).

ᓇᒧᖔᓯᒪᕙᓂᕐᓂᖏᑦ ᓇᔪᖅᐸᒃᑕᖏᓐᓂᐅᓐᖏᑦᑐᖅ ᑕᐃᒪᓐᓇᐅᔪᖅ ᓇᒥᑐᐃᓐᓇᖅ ᐃᓚᒌᑦ ᓇᓄᐃᑦ ᑭᒡᓕᐊᓂ ᑕᐃᒪᓗ ᑕᒪᕐᒥᒃ ᓇᓄᐃᑦ ᓈᓴᖅᑕᐅᓯᒪᕗᑦ ᐊᑕᐅᓯᐊᖅᔪᑎᒃ ᖃᖓᑕᓲᒃᑯᑦ ᐊᑕᐅᓯᖅ ᐃᓚᖏᑦ ᑕᒪᐃᓐᓂᖔᖅᓯᒪᕐᑰᓐᖏᑦᑐᑦ. ᑕᒪᕐᒥᒃ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᖏᑦ ᓇᓐᓄᒐᓯᒃᑕᐅᓰᑦ, ᐊᒻᒪᓗ ᓂᕿᒃᓴᓇᔭᐅᓪᓗᑎᒃ ᖃᐅᔨᒪᓇᓕᓰᖅ ᐅᓄᕐᓂᖏᑦᑎᒍᑦ ᒪᓕᒃᓗᒋᑦ ᖃᖓᑕᓲᒃᑯᑦ ᓈᓴᖅᑕᐅᔪᓂᑦ ᖃᖓᑕᓲᒃᑯᑦ. ᐃᓕᓐᓇᓯᒃᑕᕗᑦ ᓴᕿᑎᑦᑎᔪᖅ ᐅᓄᖅᓯᒋᐊᖅᑎᑦᑎᓯᒪᔪᓐᓇᖅᑐᖅ ᐊᒻᒪᓗ ᐅᓄᓐᖏᓪᓕᒋᐊᖅᑎᑦᑎᓯᒪᔪᓐᓇᖅᑐᓗ ᐊᖑᓇᓯᒃᑕᐅᔪᓂ ᖃᓅᑎᒋᓂᖏᓐᓂ ᑕᒫᖓᑦᑐᓄᑦ ᕿᓇᒥ ᐅᐸᒃᓯᒪᓚᐅᖅᑲᑦᑕᖏᓐᓂᑦ ᓇᓄᐃᑦ. ᐊᒥᓯᑦ ᓈᓴᖅᓯᒪᔪᑦ ᓇᓚᐅᑖᖅᓯᒪᔪᑦ ᐱᓯᒪᓂᖅᑎᑦᑎᔾᔪᓐᓇᖅᑐᑦ ᐊᖑᓇᓯᒃᑕᐅᓗᐊᖅᑎᑦᑎᓗᑎᒃ ᐅᕙᓗᓐᓂᑦ ᐊᖑᓇᓯᒃᑕᐅᓗᐊᖅᑎᑦᑎᓐᖏᓐᓇᓗᑎᒃ ᐊᐅᓚᑦᑎᔾᔪᑎᒃᓴᓄᑦ ᑐᑭᓕᐅᕈᑎᒋᓯᒪᔭᑎᒃ ᐊᑐᖅᑕᐅᓂᐊᕐᒪᑕ. ᑕᐃᒪᖓᓂᑦ ᑕᒪᕐᒥᐸᓗᒃ ᓇᓄᐃᑦ ᑕᐃᑲᓂ ᓄᓇ 2 ᓂᕈᐊᑖᓕᖅᓯᒪᓐᖏᑦᑐᑦ, ᓇᓕᖅᑲᓕᖅᑎᑦᑎᓂᖅ ᐊᐅᖏᑦᑎᒍᑦ ᑭᓇᐅᓂᖏᓐᓂᒃ ᑖᒃᑯᓇᖓᑦ ᓂᕿᖏᓐᓂᑦ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᓯᒪᔪᓂᑦ ᓂᕕᖓᑖᖅᖏᑦᑐᑦ ᓇᓄᒃᑕᖑᔪᓂᑦ ᖃᐅᔨᓴᕈᑎᑖᑦ ᑐᓴᐅᒪᔾᔪᑎᒃᓴᑐᐃᓐᓇᐅᓂᐊᖅᑐᑦ ᖃᐅᔨᓇᓯᑎᐊᕐᓗᒋᑦ ᐊᑦᑕᕐᓇᖅᑐᒦᒻᒪᖔᑕ ᓇᓐᓄᑕᐅᓇᓯᒥᐊᒃᓴᖏᓂᒃ ᐊᔾᔨᒋᔭᐅᖏᑦᑕᖓ ᖃᓂᒋᔭᖏᓐᓂᑦ ᓄᓇᓂᑦ. ᑕᐃᒪᓐᓇᐅᒐᓗᐊᖅᑎᓪᓗᒍ, ᐅᓇ ᐃᓕᑕᐅᓇᓯᒃᑐᖅ ᒪᓕᑦᑎᐊᕋᔭᖅᑑᒐᓗᐊᖅ

ᑐᓴᕋᒃᓴᓂᒃ ᑐᓂᔭᐅᔪᓂᑦ ᖃᖓᑕᓲᒃᑯᑦ ᓈᓴᖅᑕᕕᓂᕐᓂᑦ ᑐᑭᓕᐅᕈᑎᒋᓗᒍ ᖃᓄᐃᓕᖓᓂᖓ ᐊᒻᒪᓗ ᐊᓯᕈᖅᑕᖃᑦᑕᕐᓂᖏᑦ ᓇᓄᐃᑦ ᑕᒪᐃᓐᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ.

ᐃᓕᓴᕆᔭᐅᔪᑦ

ᖃᓄᐃᓕᐅᕆᐊᖅᑲᖅᑐᓄᑦ, ᑮᓇᐅᔭᓂᒃ, ᐊᒻᒪᓗ ᖃᓄᑐᐃᓐᓇᖅ ᐃᑲᔪᖅᑐᑦ, ᖁᔭᓐᓇᒦᒃ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐃᓕᓐᓂᐊᕈᑎᖏᑦ, ᐊᕙᑎᓕᕆᔩᒃᑯᑦ ᑲᓇᑕ, ᑲᔅᑲ ᒍᔅ ᓯᓂᒃᑕᕐᕕᒃ, ᐃᒃᑎᐅ ᐃᓚᒌᑦ ᑐᓐᖓᕕᖓᑦ, ᒫᓂᑑᐸ ᓄᓇᒥᐅᑕᓕᕆᔩᒃᑯᑦ, ᓄᓇᒥ ᖃᐅᔨᓴᖅᑎᑦ ᐊᒻᒪᓗ ᐃᑯᒪᓕᕆᓂᕐᒥ ᖃᐅᔨᓴᖅᑐᑦ ᑲᑎᒪᔨᖏᑦ ᑲᓇᑕᒥ, ᐋᓐᑎᐅᕆᐅ ᒥᓂᔅᑕ ᓄᓇᒥᐅᑕᓕᕆᓂᕐᒧᑦ ᐊᒻᒪᓗ ᓇᐹᖅᑐᓕᕆᓂᕐᒧᑦ, ᒥᕐᖑᐃᖅᓯᕐᕕᓕᕆᔨᒃᑯᑦ ᑲᓇᑕ, ᓇᓄᐃᑦ ᓯᓚᕐᔪᐊᖅ, ᑲᓇᖕᓇᖓᓂ ᖁᓕᒥᒎᓕᑦ, ᑕᒃᓚ ᑐᓐᖓᕕᖓ, ᐃᓕᓐᓂᐊᕐᕕᒃᔪᐊᖅ ᐊᐃᐳᑕ, ᐆᒪᔪᓕᕆᓂᖅ ᐱᔾᔪᑎᖃᖅᑎᑦ ᑲᓇᑕ, ᒍᐃᔅᑕᓐ ᑐᓐᖓᕕᖓ, ᐆᒪᔪᓕᕆᔪᑦ ᑐᓴᕋᒃᓴᓕᕆᔨᑦ, ᑎᒥᖓ, ᐊᒻᒪᓗ ᓯᓚᕐᔪᐊᒥ ᐆᒪᔪᓕᕆᓂᕐᒧᑦ ᑲᓇᑕ (ᐅᑭᐅᖅᑕᖅᑐᒥ ᐆᒪᔫᖏᓐᓂᒃ ᓴᐳᓐᓂᐊᕈᑎᑦ ᑮᓇᐅᔭᒃᓴᖅ). ᖁᔭᓐᓇᒦᒃ ᒍᓕᒃ ᑎᒫᓐ, ᓚᐃᔪ ᒍᐊᑕᓐ, ᐊᒻᒪᓗ ᑕᐃᓗ ᐅᓖᔅ ᐃᑲᔪᓚᐅᕐᒪᑕ ᓄᓇᒥ. ᑯᔭᓐᓇᒦᒃ ᖃᖓᑕᓲᒃᑯᑦ ᑕᒡ ᕼᐅᑦᐱ (OMNRF), ᐊᒻᒪᓗ ᔭᐃᒥ ᐳᓪᔅ ᐊᒻᒪᓗ ᔭᔅᑎᓐ ᓯᓂᐅᒃ (ᐱᓇᖕᓇᖓᓂ ᖁᓕᒥᒎᖅᑎᑦ). ᖁᔭᓐᓇᒦᒃ ᐃᕙᓐ ᐅᓕᑦᓯᑦᓯᓐ ᐊᒻᒪᓗ ᓃᓐ ᐹᓐᔅ ᕿᒥᕈᐊᓚᐅᕐᒪᑕ ᑭᖑᓂᑦᑎᓐᓂ ᐅᓂᒃᑳᓕᐅᖅᓯᒪᔭᑦᑎᓐᓂᒃ. ᐃᓕᓴᕆᔭᕗᑦ ᐊᒻᒪᓗ ᖁᔭᓐᓇᒦᒃ ᐸᒃᔅ ᓕᒃ ᑯᓕᐄ ᐊᓪᓚᐃᑦ, ᒍᐊᔅᕼᐅ ᑯᓕᐄ, ᒍᐃᓅᔅ ᐊᓪᓚᐃᑦ ᐊᒻᒪᓗ ᔪᐊᒃ ᕗᒃᑐᓕ ᐊᓪᓚᐃᑦ.

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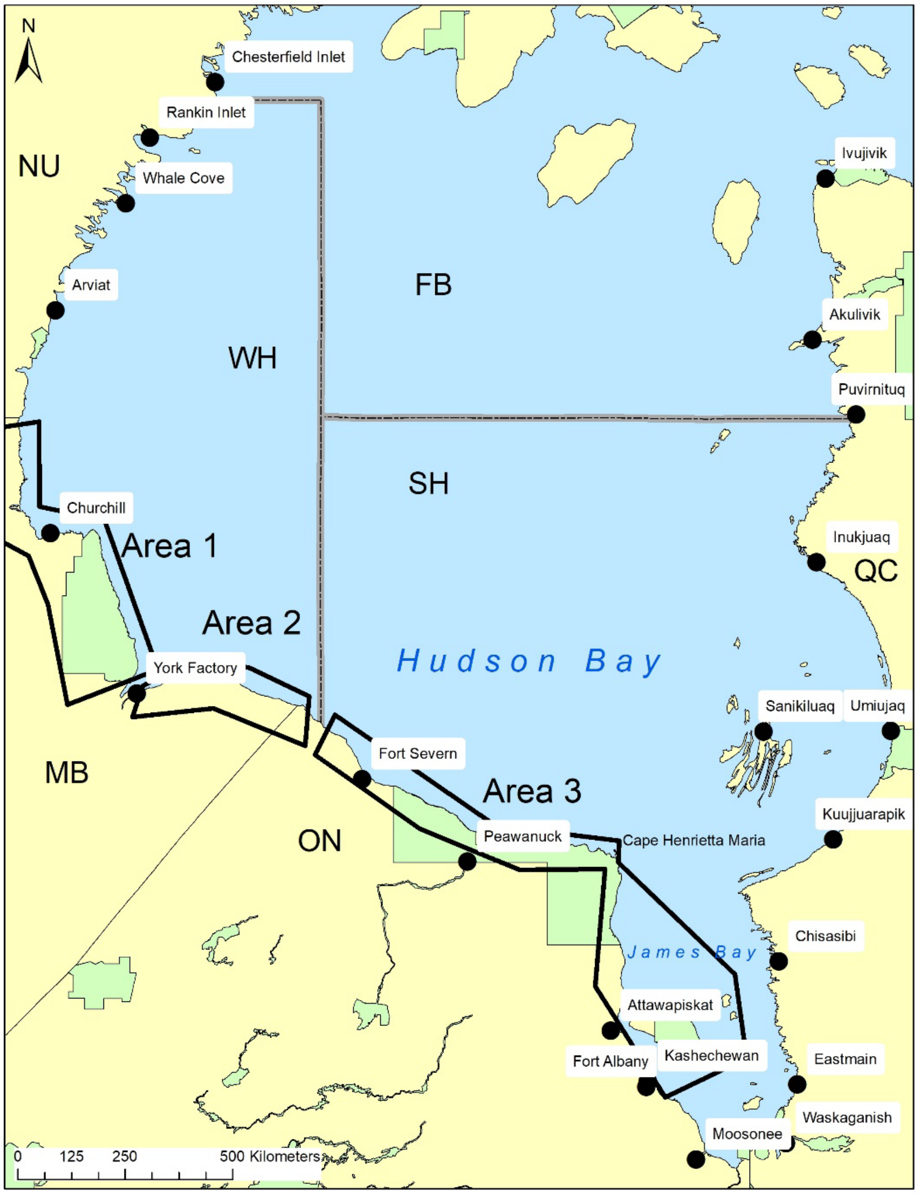
ᓇᓗᓇᐃᖅᓯᔪᖅ 1. ᖃᑦᓯᐅᓂᖏᑦ ᓂᕿᖏᑦᑎᒍᑦ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᔪᑦ ᓇᓄᐃ >1 ᐅᑭᐅᖃᖅᑐᑦ ᑕᐃᑲᓂ ᓄᓇ 2 ᐊᔾᔨᒋᓚᐅᓐᖏᑕᖏᑦ ᓂᕕᖓᑖᓕᖅᑕᐅᓂᑯᓂᑦ ᐅᕝᕙᓘᓐᓃᑦ ᐊᔾᔨᒋᓚᐅᖅᑕᖏᑦ ᓂᕕᖓᑖᓕᖅᑕᐅᓂᑯᓂᑦ ᓇᓄᐃᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂᑦ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐅᕝᕙᓘᓐᓃᑦ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ. ᑭᖑᓂᑦᑎᓐᓂ ᓂᕕᖓᑖᓕᖅᓯᒪᔪᑦ ᓇᓄᐃᑦ ᐃᓱᒪᖏᔭᐅᕗᑦ ᐱᒋᔭᐅᔪᑦ ᐃᓚᒌᖕᓂᑦ ᐅᑯᐊᓗ ᓯᕗᓪᓕᖅᐹᒥᒃ ᑕᑯᔭᐅᓚᐅᖅᑐᑦ. ᓄᓇ 3 ᖃᐅᔨᓴᕈᑎᑖᕐᕕᖓ ᓱᓕ ᐃᓗᐊᓃᖀᒃᔪᒃᑐᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᒥ/ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑭᒡᓕᐊ ᑕᐃᑲᓂ 2018/2019 ᐊᒻᒪᓗ ᑕᒪᕐᒥᐸᓗᒃ ᐋᓐᑎᐅᕆᐅ ᓯᓪᔭᖓ ᑕᓯᐅᔭᕐᔪᐊᒥ 2021-ᒥ ᐊᒻᒪᓗ ᐱᔭᕇᓚᐅᖅᑐᑦ ᑕᒪᒃᑭᖅᓱᒍ 2022-ᒥ.

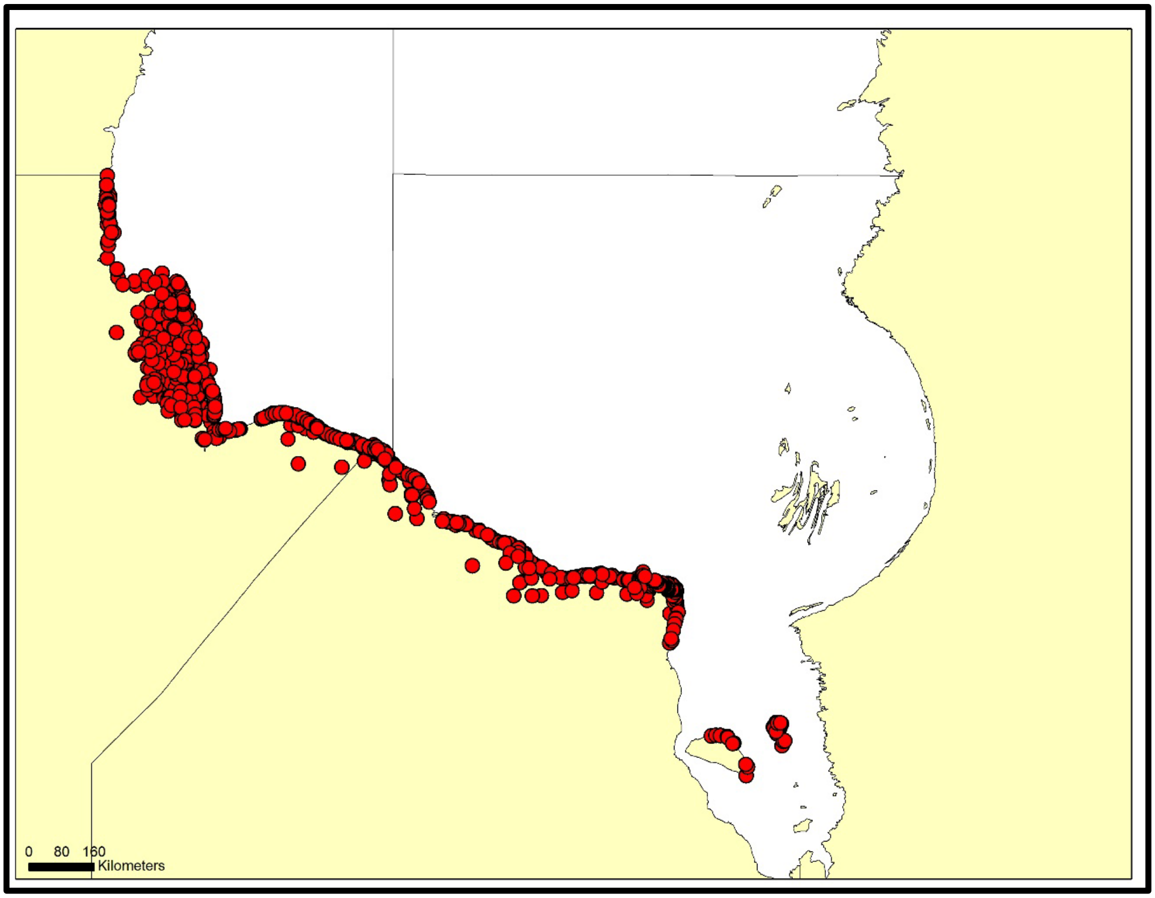
ᖃᐅᔨᓴᕈᑎᑖᕕᒃ ᓇᓃᓐᓂᖓ	ᐊᕐᕌᒍᒥ	ᖃᑦᓯᑦ	ᐊᔾᔨᒋᓚᐅᓐᖏᑕᖏᑦ ᓂᕕᖓᑖᓕᖅᑕᐅᓂᑯᓂᑦ	ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ	ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓄᐃᑦ
ᓄᓇ 2	2017†	60	34 (57%)	17 (28%)	9 (15%)
	2018	140	88 (63%)	32 (23%)	20 (14%)
	2019	160	113 (71%)	30 (19%)	17 (11%)
	2021*	140	44 (31%)	87 (62%)	9 (6%)
	2022*	146	33 (23%)	98 (67%)	15 (10%)
ᓄᓇ 3					
	2017	n/a	n/a	n/a	n/a
	2018	8	6 (75%)	1 (12.5%)	1 (12.5%)
	2019	12	7 (58%)	1 (8%)	4 (34%)
	2021*	183	119 (65%)	45 (25%)	19 (10%)
	2022*	259	182 (70%)	18 (7%)	59 (23%)

†ᖃᐅᔨᓴᕈᑎᑖᖅᑐᖃᓚᐅᖕᖏᑦᑐᖅ ᐋᓐᓂᐅᑎᓇᔪᖕᒪᓂ ᐃᓚᖕᒪᓂ ᓄᓇ 2 ᑕᐃᑲᓂ 2017.

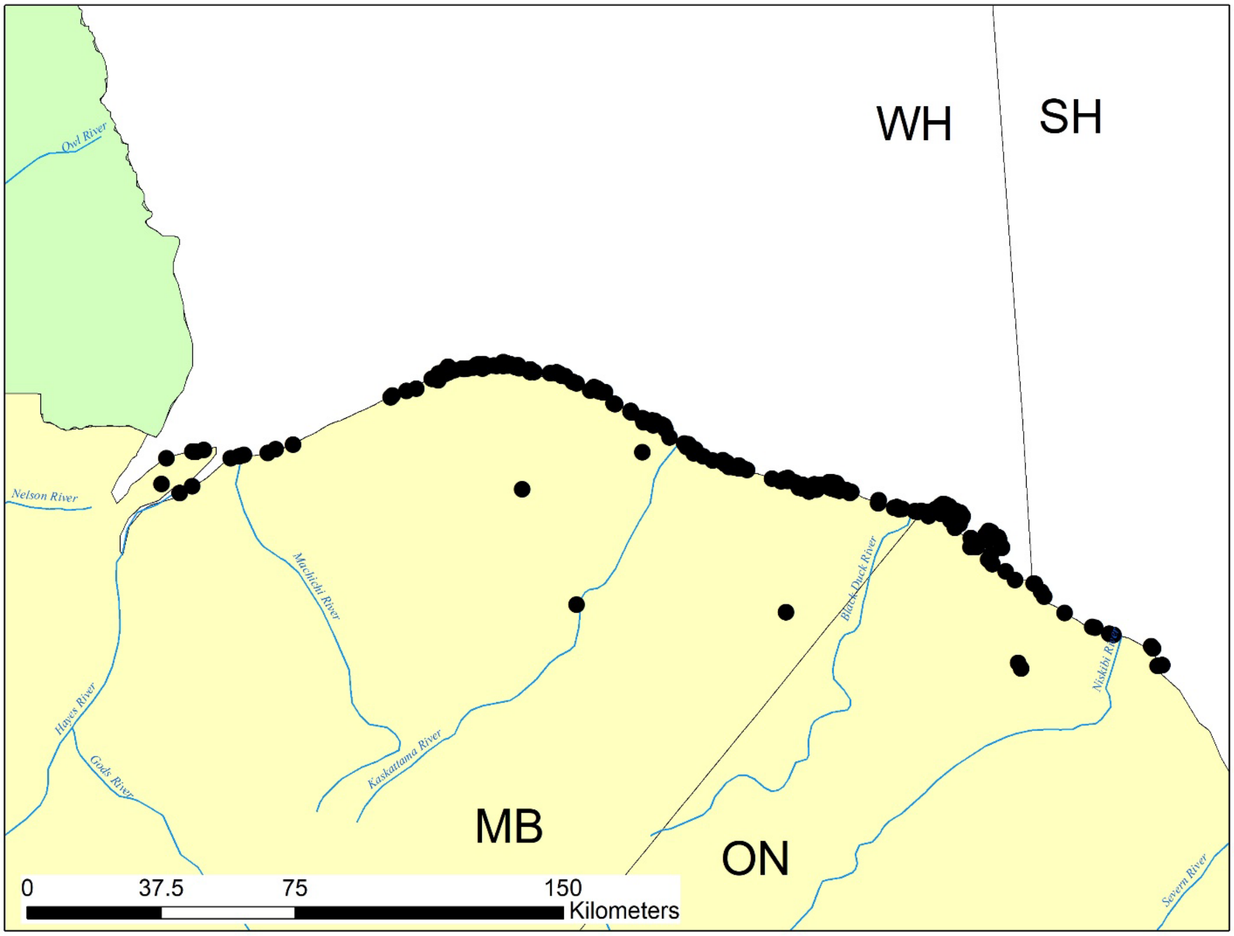
*2021 ᐊᒻᒪᓗ 2022 ᑕᒪᕐᒥᒃ ᑭᖑᓂᑦᑎᓐᓂ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᓯᒪᔪᑦ ᓇᓄᐃᑦ ᐊᑐᖅᑕᐅᓚᐅᖅᑐᑦ ᖃᐅᔨᓇᓱᒃᓱᒋᑦ ᐊᐅᖏᑦᑎᒍᑦ ᐊᔾᔨᒋᔭᐅᖕᒪᖔᑕ ᐃᓚᒋᔭᐅᓪᓗᑎᒃ ᓇᓄᐃᑦ ᑖᒃᑯᐊᑐᐊᖅ ᑭᖑᓂᑦᑎᓐᓂ ᓂᕿᖏᑦ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᓂᑯᑦ 2017-ᒥᑦ 2019-ᒧᑦ ᐊᔾᔨᒋᔭᑐᐊᖏᑦ ᓂᕕᖓᑖᖅᑐᓄᑦ ᓇᓄᕐᓄᑦ ᐅᖃᐅᓯᐅᓯᒪᔪᓂ.



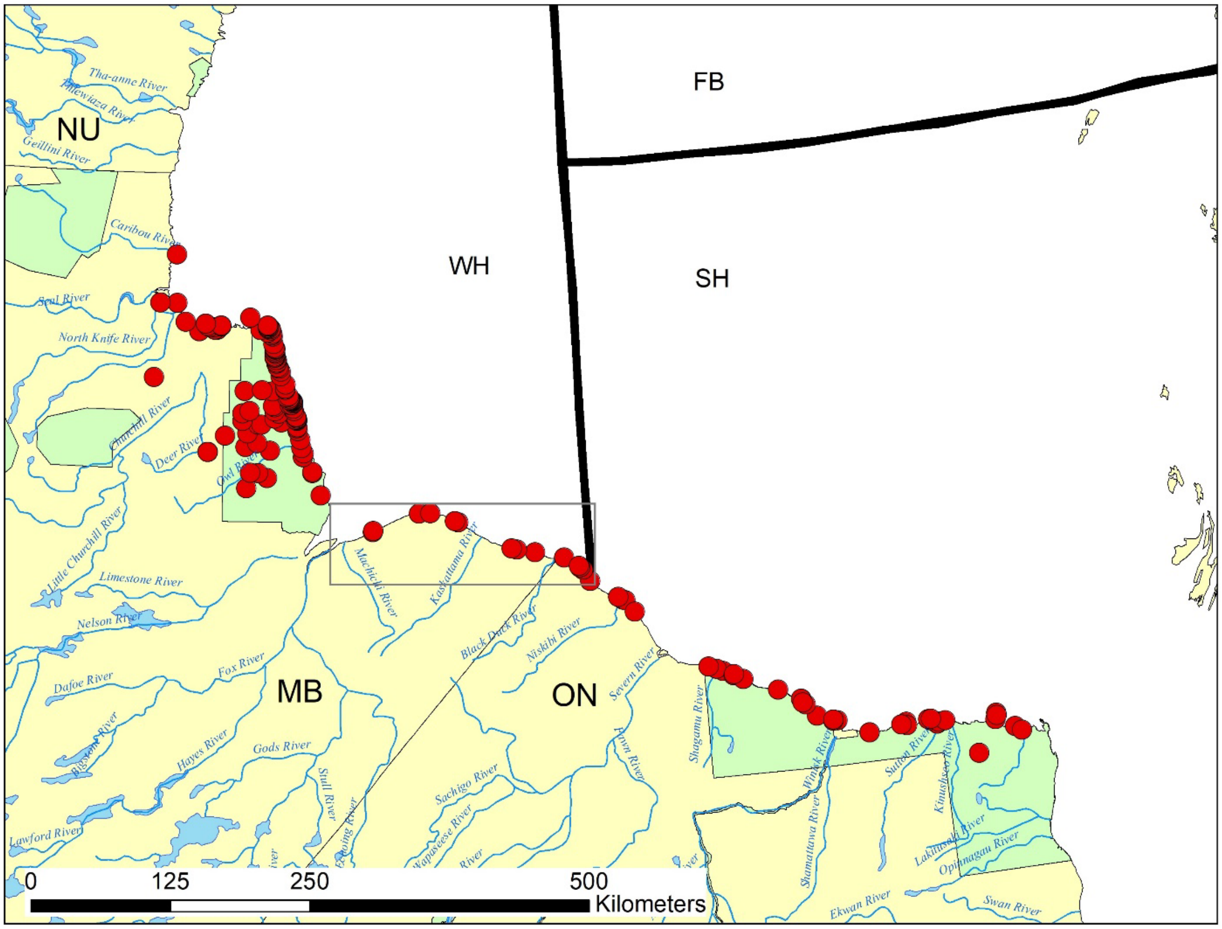
ᓴᕿᔮᖅᑐᖅ 1. ᑕᓯᐅᔭᕐᔪᐊᖅ ᓴᕿᔮᖅᑐᑦ ᐊᐅᓚᑦᑎᕕᐅᔪᑦ ᑭᒃᓕᖏᑦ (ᐊᖕᒪᓗᖅᑐᑦ) ᐊᕙᑖᓂᑦ ᐊᑭᓐᓇᖅᐸᓯᐊ ᑕᓯᐅᔭᕐᔪᐊᖅ, ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ, ᐊᒻᒪᓗ ᓯᑯᓰᖅ ᐃᒪᖕᑲ (FB) ᓄᓇᖏᑦ ᓇᓄᐃᑦ ᐃᓚᖏᓪᓗ ᐊᒻᒪᓗ ᓄᓇᖕᑲᓂᒃ ᖃᐅᔨᓴᕈᑎᑖᑦ 1, 2 ᐊᒻᒪᓗ 3.



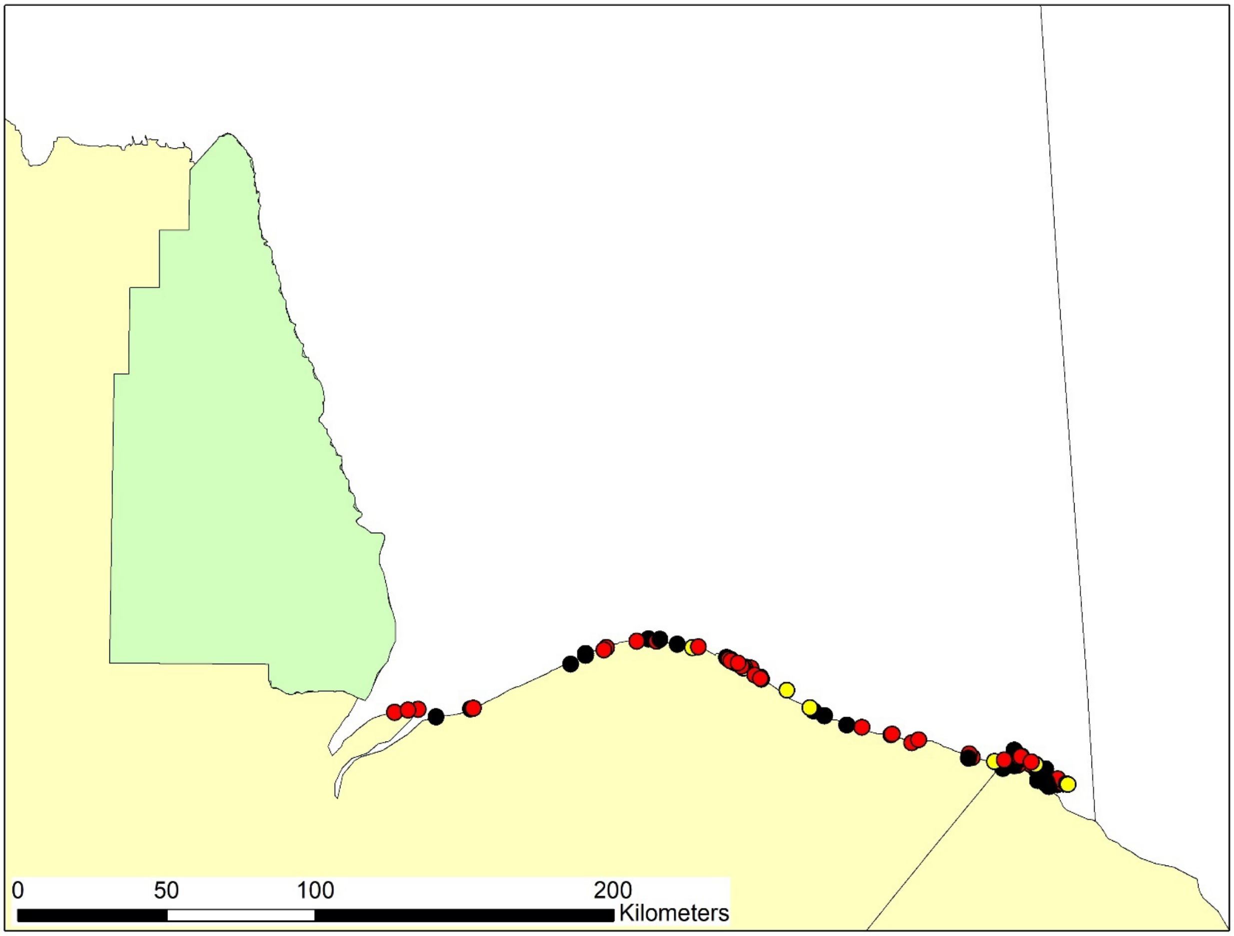
ᓴᕿᔮᖅᑐᖅ 2. ᐅᖓᓯᒌᒃᑑᑕᐅᓂᖏᑦ ᓇᒧᖕᒌᓯᒪᔪᑦ ᓇᓄᐃᑦ ᑕᖏᖏᓐᓂᒃ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᒋᓯᒪᔭᕗᑦ ᓂᕿᖏᓐᓂᑦ ᖃᐅᔨᓴᕈᑎᑖᑦᑎᓐᓂᑦ ᐅᕝᕙᓘᓐᓃᑦ ᓇᓐᓄᒃᑕᐅᔪᓂᑦ ᐊᕙᑖᓂᑦ 2017 ᐊᒻᒪᓗ 2022.



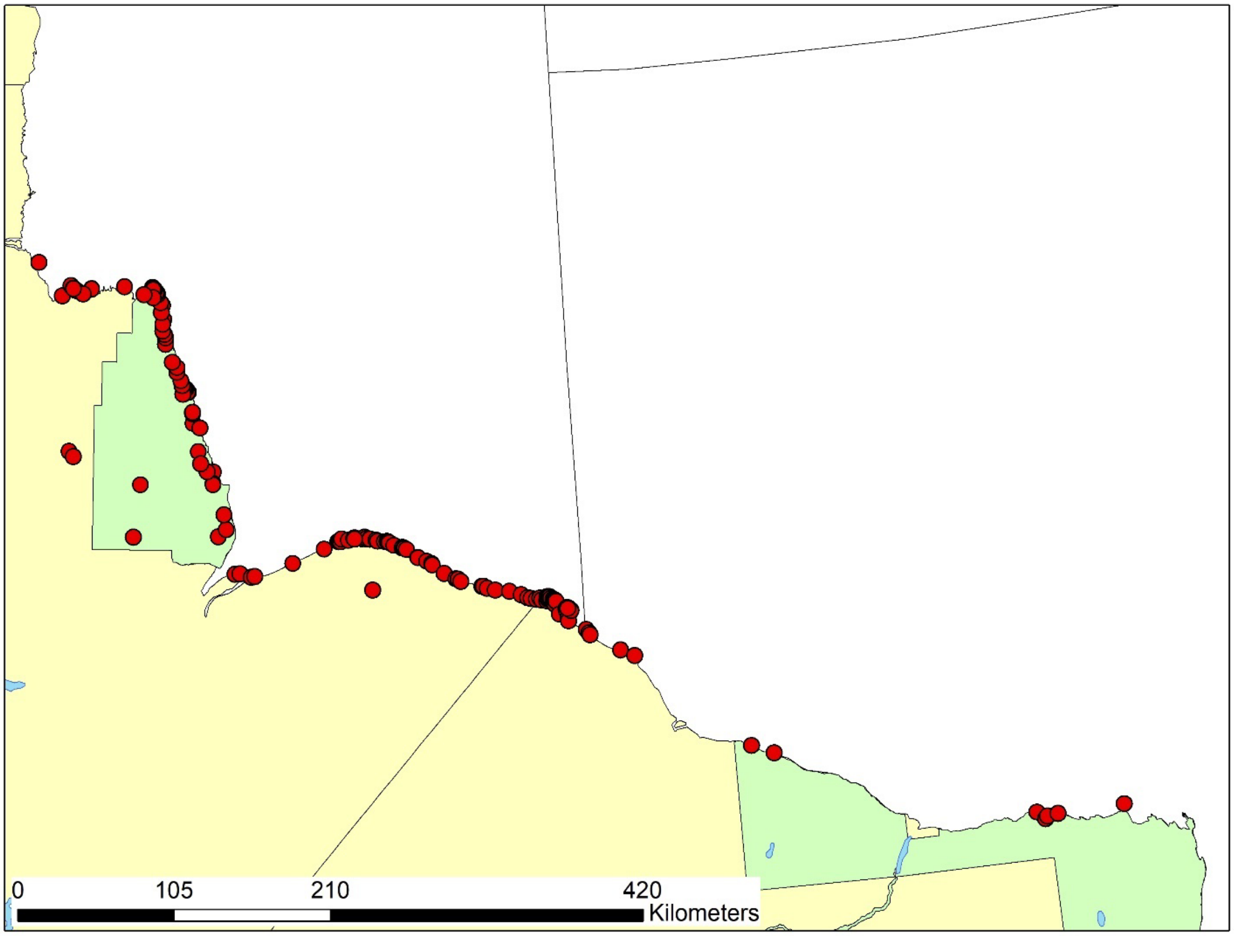
ᓴᕿᔮᖅᑐᖅ 3. ᓇᓃᓐᓂᖕᒋᑦ ᓇᓄᐃᑦ ᖃᐅᔨᓴᕈᑖᕐᕕᐅᔪᑦ, 2017-ᒥᑦ 2019-ᒧᑦ ᑖᒃᑯᓇᓂ ᓄᓇ 2 ᐊᒻᒪᓗ ᓄᓇ 3.



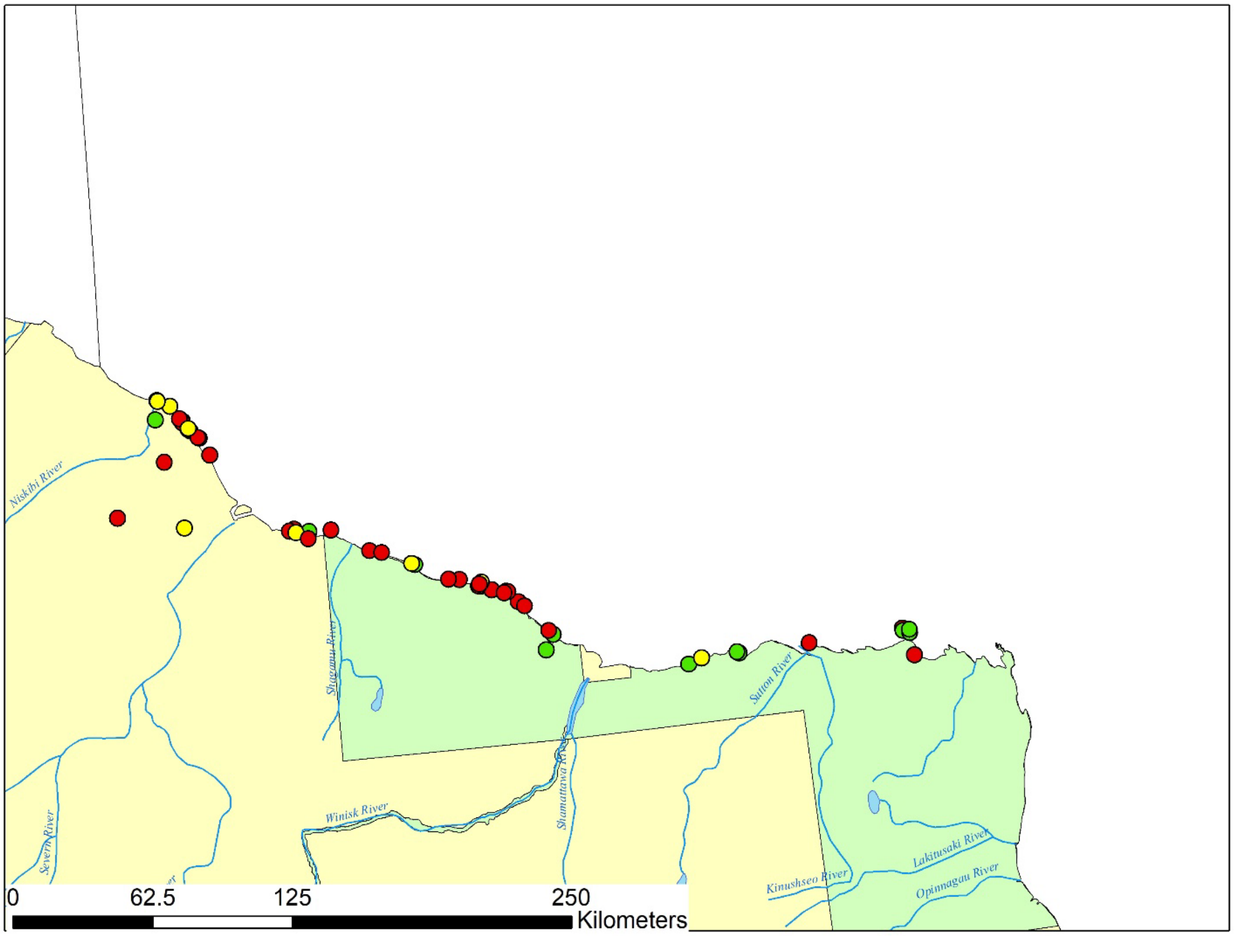
ᓴᕿᔮᖅᑐᖅ 4. ᑭᖑᓂᑦᑎᓐᓂ ᓇᓃᓚᐅᕐᓂᖏᑦ 100 ᓇᓄᐃᑦ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᔪᑦ ᑕᐃᑲᓂ ᓗᓇ 2 (ᓯᐊᕐᓇᖅ ᑭᑉᐹᕆᑐᖅ) ᑕᐃᑲᖓᑦ 2017 ᑎᑭᓪᓗᒍ 2019 (ᓴᕿᔮᖅᑐᖅ 3) ᐅᓇ ᐊᔾᔨᖑᖏᑦ ᐊᑐᓂ ᓂᕕᖓᑖᖃᖅᑐᑦ ᓯᕗᓂᐊᓂ 2017 ᐊᒻᒪᓗ ᓇᓗᓇᐃᖅᑕᐅᓚᐅᖅᑐᑦ ᑕᐃᑲᖓᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᐅᓐᓄᑦ ᓇᓗᓇᐃᑯᑕᖃᕐᕕᐅᔪᒥ. ᓇᓐᓄᒃᑐᖃᓚᐅᓐᖏᑦᑐᖅ ᐊᒻᒪᓗ ᓂᕕᖓᑖᓕᖅᓯᔪᖃᓚᐅᓐᖏᑦᑐᖅ ᐋᓐᑎᐅᕆᐅ ᓯᓪᔭᓕᒫᖓᓂᑦ ᑕᐃᒪᖓᓂᑦ 2009 ᐅᖅᑰᓐᓃᑦ ᑕᐃᑲᓂ ᓗᓇ 2 ᑕᐃᒪᖓᓂᑦ 2005.



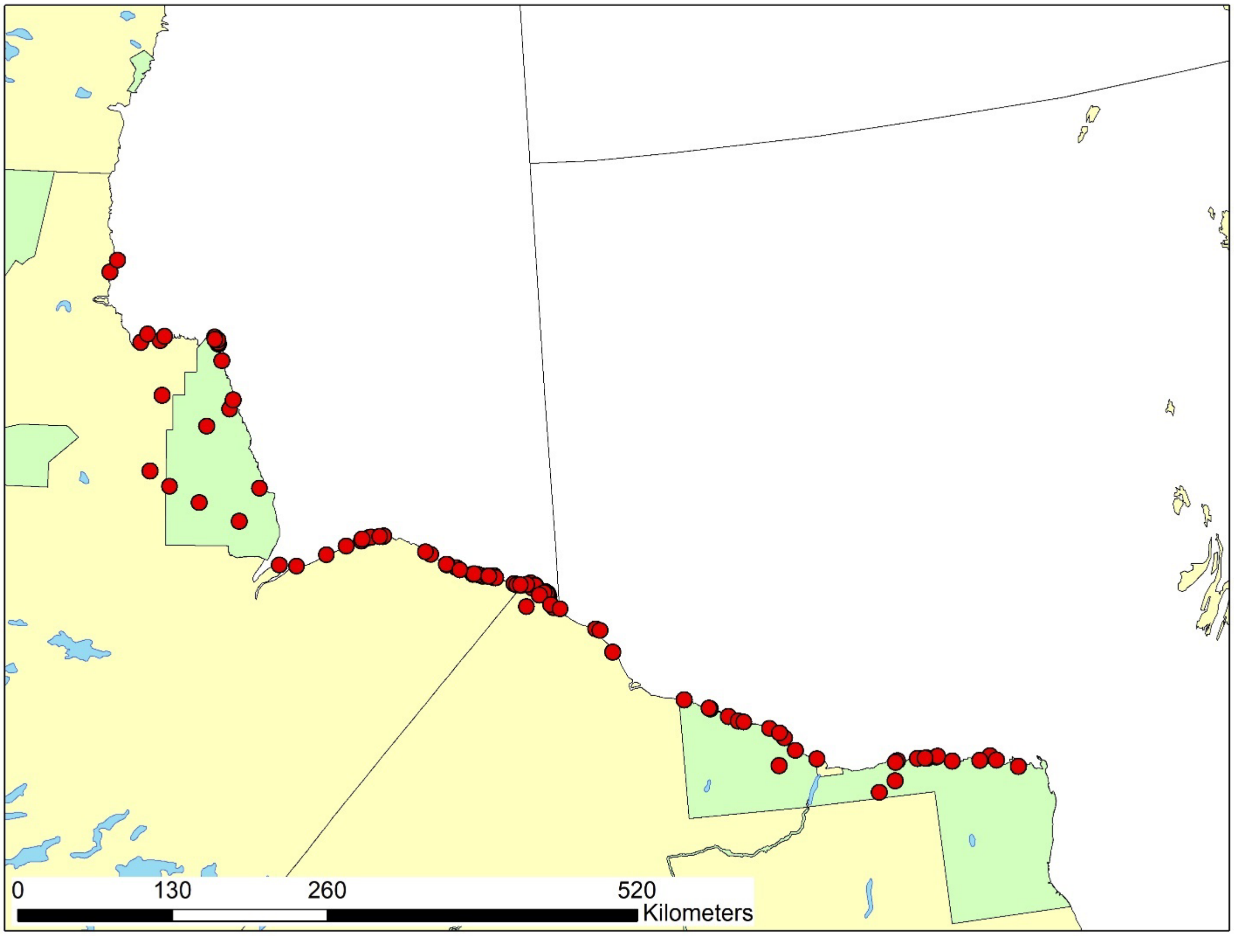
ᓴᕿᔮᖅᑐᖅ 5. ᓇᓃᓐᓂᖏᑦ ᓇᓄᐃᑦ ᓂᕿᖏᓐᓂᑦ ᖃᐅᔨᓴᕈᑎᑖᕝᕕᐅᔪᑦ 2021-ᒥ ᑕᐃᑲᓂ ᓄᓇ 2 ᐅᑯᐊᓗ ᐊᔾᔨᖏᑦ ᐊᑐᓂ ᖃᐅᔨᓴᕈᑎᑖᕝᕕᐅᓯᒪᔪᖅ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ (ᐊᐅᐸᖅᑐᑦ ᐊᖑᒪᓗᖅᑐᑦ) ᑕᒪᒃᑮ ᓂᕆᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (ᖁᖅᓱᖅᑐᑦ ᐊᖑᒪᓗᖅᑐᑦ) ᐊᒻᒪᓗ ᓯᕗᓪᓕᖅᐹᒥᒃ ᐱᔭᐅᔭᕆᐅᖅᑐᑦ (ᕿᓂᖅᑐᑦ ᐊᖑᒪᓗᖅᑐᑦ).



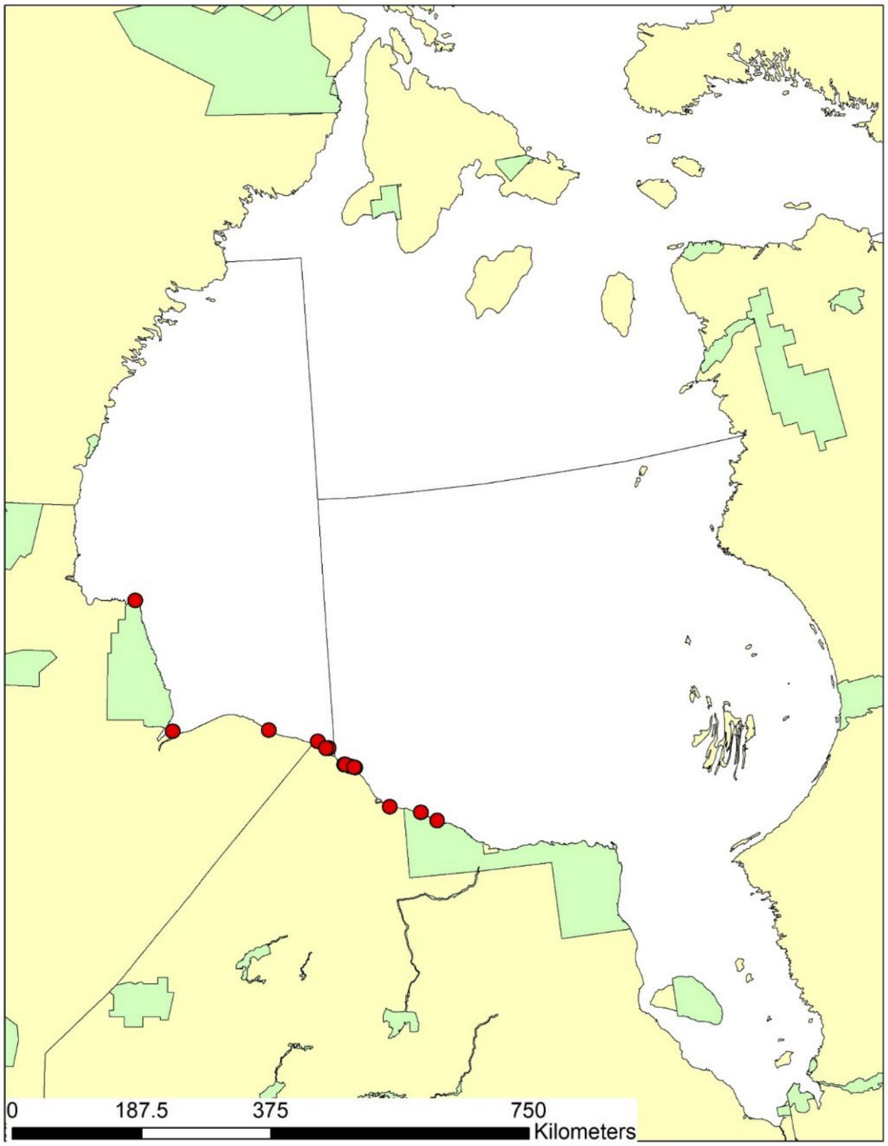
ᓴᕿᔮᖅᑐᖅ 6. ᑭᖑᓂᑦᑎᓐᓂ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᔪᑦ ᐃᓂᖏᑦ 96 ᓇᓄᐃᑦ (ᓇᓐᓄᒃᑕᐅᔪᑦ ᐅᕝᕙᓘᓐᓃᑦ ᓂᕿᖏᓐᓂᑦ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᔪᑦ ᑖᒃᑯᓇᖓᑦ ᓴᕿᔮᖅᑐᑦ 5) ᐅᑯᐊᓗ ᓂᕿᖏᑦ ᖃᐅᔨᕈᑎᑖᕐᕕᐅᓚᐅᖅᑐᖅ ᑕᐃᑲᓂ ᓄᓇ 2 2021-ᒥ.



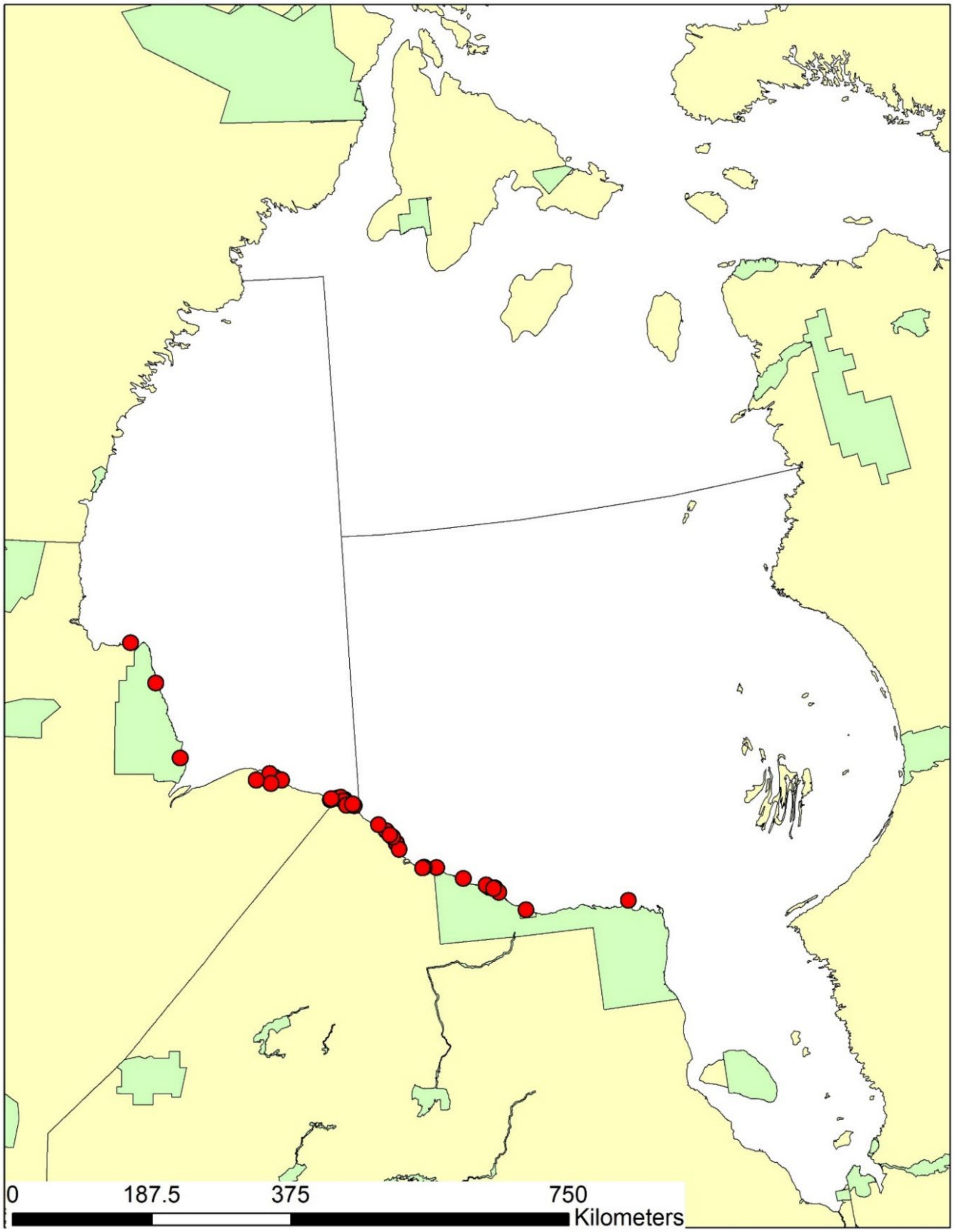
ᓴᕿᔮᖅᑐᖅ 7. ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᔪᑦ ᐃᓂᖏᑦ 65 ᓇᓄᐃᑦ ᓂᕆᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ 2021-ᒥ ᐅᑯᐊᓗ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᓚᐅᖅᑐᑦ ᑭᖑᓂᑦᑎᓐᓂ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᒥ (ᐊᐅᐸᖅᑐᑦ ᐊᖕᒪᓗᖅᑐᑦ), ᑕᒪᒃᑮ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᐊᒻᒪᓗ ᓂᕆᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (ᖁᖅᓱᖅᑐᑦ ᐊᖕᒪᓗᖅᑐᑦ), ᐊᒻᒪᓗ ᑖᒃᑯᐊᑐᐊᖅ ᓂᕆᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (ᐆᔭᐅᔭᑦ ᐊᖕᒪᓗᖅᑐᑦ).



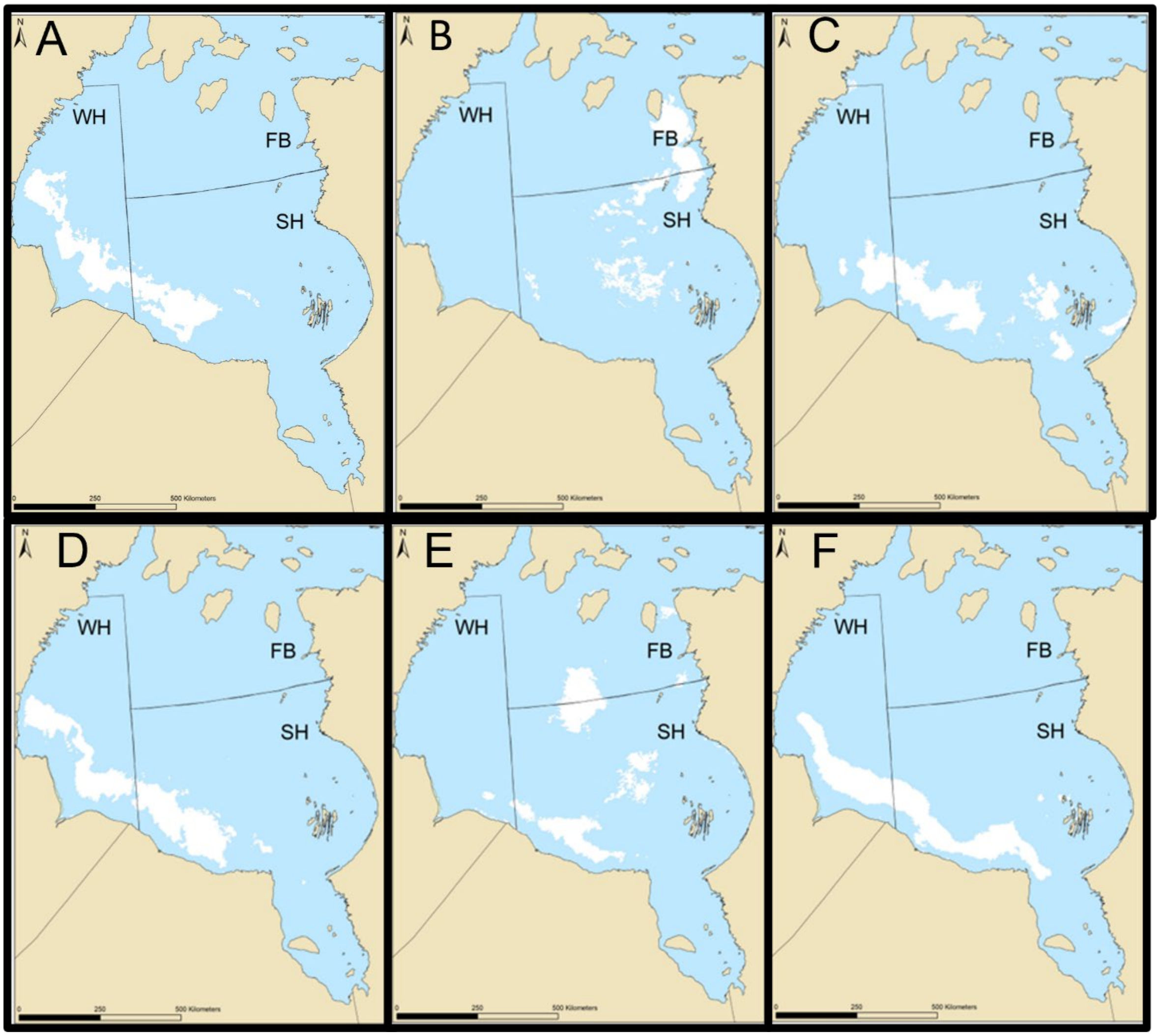
ᓴᕿᔮᖅᑐᖅ 8. ᑭᖑᓂᑦᑎᓐᓂ ᖃᐅᔨᓴᕈᑎᑖᕝᕕᐅᔪᑦ ᐃᓂᖏᑦ 65 ᓇᓄᐃᑦ (ᓴᕿᔮᖅᑐᖅ 7) ᐅᑯᐊᓗ ᓂᕿᖏᓐᓂᑦ ᖃᐅᔨᓴᕈᑎᑖᕝᕕᐅᓯᒪᔪᑦ 2021-ᒥ ᑕᐃᑲᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ.



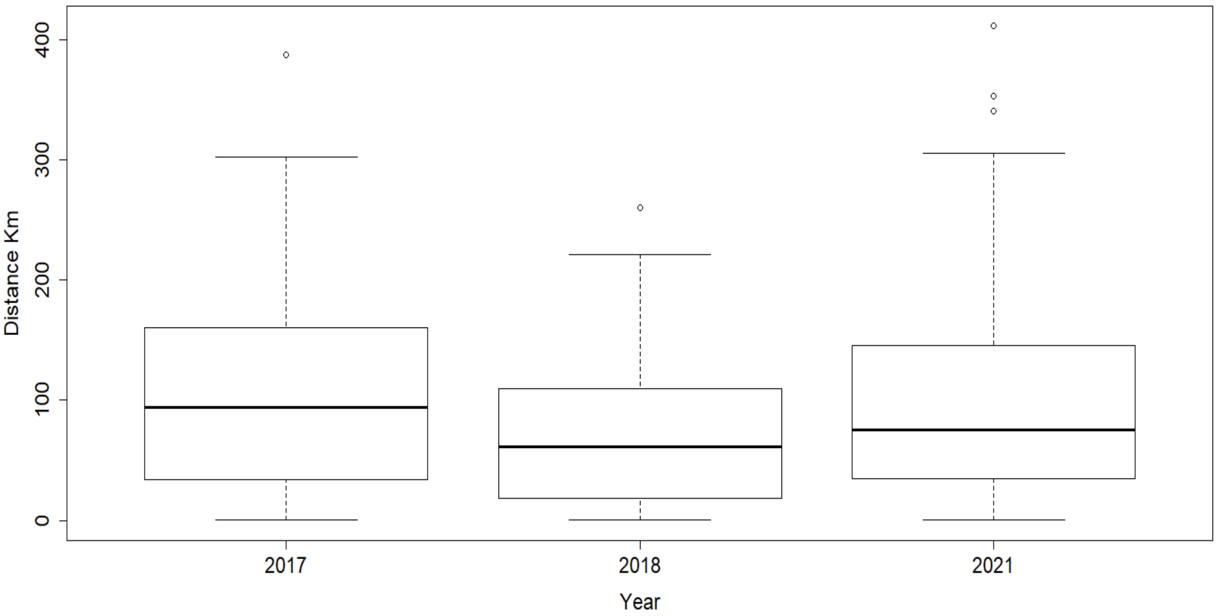
ᓴᕿᔮᖅᑐᖅ 9. ᓇᒧᙵᓯᒪᓂᖏᑦ ᓇᓄᐃᑦ ᑕᐃᑲᓂ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ 2021-ᒥ ᖃᐅᔮᓴᕈᑎᑖᕐᕿᐅᒃᑲᓐᓂᓚᐅᖅᑐᑦ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᑕᐃᑲᓂ 2022 (ᓲᕐᓗ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ ᓇᓅᓐᓂᖏᑦ 2021-ᒥ ᑕᐃᒪᓗ ᑕᐃᑲᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓅᓐᓂᖏᑦ 2022-ᒥ ᑖᒃᑯᐊᑦᑕᐃᓐᓇᐃᑦ ᓇᓄᐃᑦ).



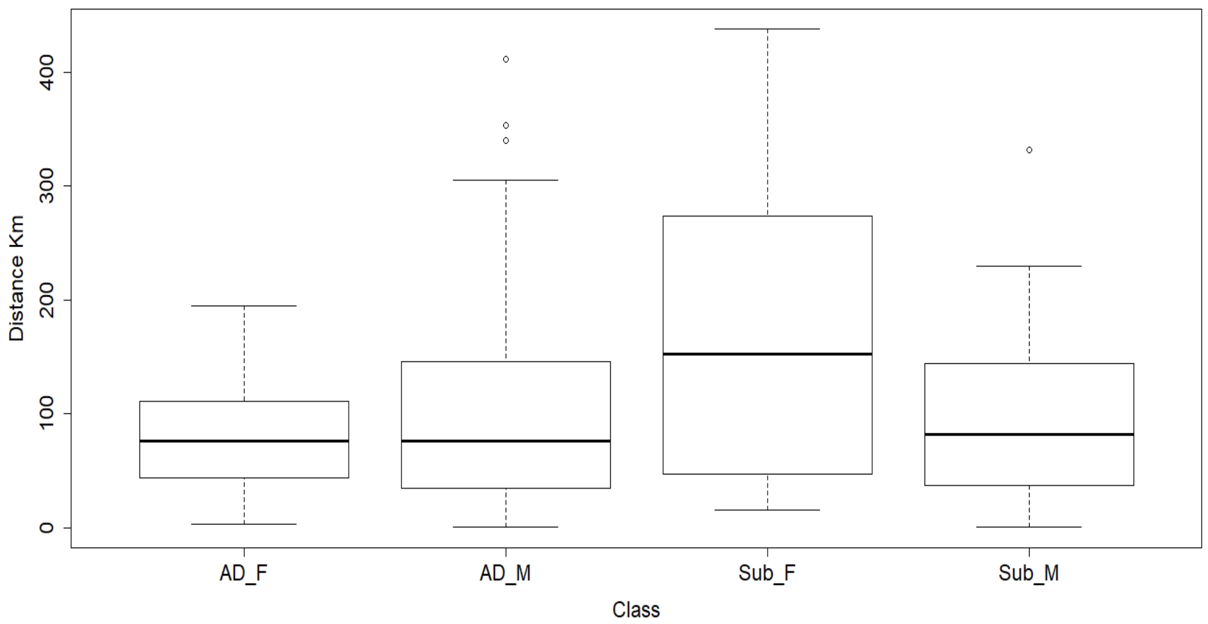
ᓴᕿᔮᖅᑐᖅ 10. ᓇᒧᖕᖓᓯᒪᓂᖏᑦ ᓇᓄᐃᑦ ᑕᐃᑲᓂ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ 2021-ᒥ ᖃᐅᔨᓴᕈᑎᑖᕐᕕᐅᒃᑲᓐᓂᓚᐅᖅᑐᑦ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ ᑕᐃᑲᓂ 2022 (ᓲᕐᓗ ᓂᒋᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓅᓐᓂᖏᑦ 2021-ᒥ ᑕᐃᒪᓗ ᑕᐃᑲᓂ ᐊᑭᓐᓇᖅᐸᓯᐊᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ ᓇᓅᓐᓂᖏᑦ 2022-ᒥ ᑖᒃᑯᐊᑦᑕᐃᓐᓇᐃᑦ ᓇᓄᐃᑦ).



ᓴᕐᑭᔮᖅᑐᖅ 11. ᓯᑯᒐᓛᖕᓂᖕᒐ (ᑕᐳᓯᖅ ᓯᑯᐊ ᑕᒪᕐᒥᒃ ≥ 30% ᑕᐃᑲᓂ ᑕᕆᐅᖅ ᓯᑯᐊ ᐊᖏᓂᖃᖅᑎᓪᓗᒍ 10% ᐅᑭᐅᒃᑯᑦ ᑕᒪᒃᑭᖅᓯᒪᓪᓗᓂ) ᑕᐃᑲᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ (ᐱᖃᓯᐅᑎᓇᒥ ᔮᐃᒻᔅ ᐸᐃ) ᑕᐃᑲᓂ 2017 (A), 2018 (B), 2019 (C), 2020 (D), 2021 (E) ᐊᒻᒪᓗ 2022 (F).



ᓴᕿᔮᖅᑐᖅ 12. ᑭᑉᐹᓇᒃᑑᑎᑎᒍᑦ ᑎᑎᕋᖅᓯᒪᔪᓪᓗ ᓇᔪᖅᐸᒃᑕᒥᖕᓃᖕᖏᑦᑐᑦ ᐅᖓᓯᖕᓂᖓ (ᑭᓚᒦᑕᔅ) ᐃᓐᓇᕐᓄᑦ ᐊᖑᑎᓄᑦ ᖃᐅᔾᓴᕈᑎᑖᕐᕕᐅᔪᑦ ᐊᕐᕌᒍᑕᒫᑦ 2017 (2017/2018, n=32), 2018 (2018/2019, n=80) ᐊᒻᒪᓗ 2021 (2021/2022, n=113) ᑕᐃᑲᓂ ᑕᓯᐅᔭᕐᔪᐊᖅ. ᐃᓗᐊᓃᑦᑐᖅ ᑭᒡᓕᖅᑐᖅᑐᖅ 25% ᐊᒻᒪᓗ 75%, ᑐᑭᓯᐊᑦᑎᐊᖅᑐᑦ ᖅ ᑭᒡᓕᖅᑐᖅᑐᑦ ᐱᖃᑖᓂᒃ ᐊᒻᒪᓗ ᒥᑭᔫᑎᓂ ᓇᓗᓇᐃᖅᓯᒪᔪᑦ ᖃᓂᒋᔭᖓᓃᑦᑐᑦ ᐊᖓᓗᖅᑑᑎᑯᓗᐃᑦ ᑭᒡᓕᖅᑐᖅᑐᑦ ᓯᓚᑖᓂᒃ.



ᓴᕿᔮᖅᑐᖅ 13. ᑭᑉᐹᓇᒃᑑᑎᑎᒍᑦ ᑎᑎᕋᖅᓯᒪᔪᓪᓗ ᓇᔪᖅᐸᒃᑕᒥᖕᓃᖕᖏᑦᑐᑦ ᐅᖓᓯᖕᓂᖓ (ᑭᓚᒦᑕᔅ) ᐃᓐᓇᕐᓄᑦ ᐊᕐᓇᑦ (ᐃᓐᓇᖅ_ᐊᕐᓇᖅ, n = 27), ᐃᓐᓇᐃᑦ ᐊᖑᑎᑦ (ᐃᓐᓇᖅ_ᐊᖑᑦ, n=113), ᐃᓐᓇᕈᓕᖅᑐᑦ ᐊᕐᓇᐃᑦ (ᐃᓐᓇᕈᓕᖅᑐᖅ_ᐊᕐᓇᖅ, n=20), ᐃᓐᓇᕈᓕᖅᑐᑦ ᐊᖑᑎᑦ (ᐃᓐᓇᕈᓕᖅᑐᑦ _ᐊᖑᑎᑦ, n=29) ᖃᐅᔾᔨᓯᑎᑖᕐᕕᐅᔪᑦ ᐊᑖᓂ ᐋᒍᓯ/ᓯᑎᐱᕆ 2021 ᐊᒻᒪᓗ 2022 ᑕᓯᐅᔭᕐᔪᐊᕐᒥ. ᑖᒃᑯᐊ ᑎᓴᒪᑦ ᐃᓗᐊᓂ ᐱᓯᒪᓂᖃᖅᑐᑦ 25% ᐊᒻᒪᓗ 75% ᑎᑎᑯᑖᒃᓯᒪᔪᑦ ᑭᒡᒐᖅᑐᖅᑐᖅ ᐱᖃᑖᓂᒃ ᐊᒻᒪᓗ ᒥᑭᔫᑎᓂ ᓇᓗᓇᐃᖅᓯᒪᔪᑦ ᖃᓂᒋᔭᖕᒐᓃᑦᑐᑦ ᐊᖕᒪᓗᖅᑑᑎᑯᓗᐃᑦ ᑭᒡᒐᖅᑐᖅᑐᑦ ᓯᓚᑖᓂᒃ.