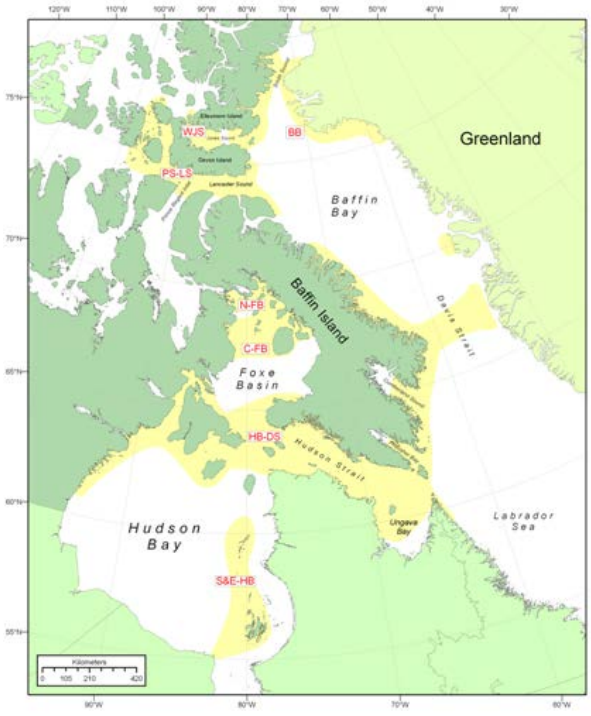


ᑲᓇᑕᒥᐅᑕᓄᑦ ᖃᐅᔨᓴᖅᑕᐅᓯᒪᔪᓂᒃ ᐅᖃᐅᔾᔨᒋᐊᕈᑎᓄᑦ ᐱᓕᕆᕝᕕᒃ

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᖃᐅᔨᓴᖅᑕᐅᓯᒪᔪᓂᒃ ᐅᖃᐅᔾᔨᒋᐊᕈᑕᐅᓂᕐᒧᑦ ᐅᓂᒃᑳᓕᐊᑦ 2013/034

ᓅᕖᕝᕙ 2013

ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᓂᖏᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᐱᔭᐅᔪᓐᓇᖅᑎᒋᓂᖏᑦ ᐊᐃᕖᑦ (ᓛᑎᓐᑎᑐᑦ
ᐅᖃᐅᓯᒃᓴᐃᑦ ᑕᐃᔭᐅᔪᑦ (Odobenus rosmarus rosmarus) ᑲᓇᑕᐅᑉ ᐅᑭᐅᖅᑕᖅᑐᖓᓂ

ᐊᑦᓛᓐᑎᒃᖑᓂᕋᖅᑕᐅᔪᒥᐊᐃᕖᑦᐊᑦᓛᓐᑎᒃᖑᓂᕋᖅᑕᐅᔪᒥ
ᐊᐃᕖᑦ (ᔾᔩᓴᓐ ᕼᐋᒧᓪᑕᓐ, ᐃᖃᓗᓕᕆᔨᒃᑯᑦ
ᑕᕆᐅᕐᒥᐅᑕᓕᕆᔨᒃᑯᓪᓗ ᑲᓇᑕᒥ)

ᐊᔾᔨᖑᐊᖅ 1. ᓇᓃᓐᓂᖏᓐᓂᑦ ᐊᐃᕖᑦ
(ᓇᓗᓇᐃᒃᑯᑕᖃᖅᑎᑕᐅᓂᖏᑦ ᐊᐅᐸᓗᒃᑐᑦ) ᑲᓇᑕᐅᑉ ᐅᑭᐅᖅᑕᖅᑐᖓᓂᒃ

(ᖃᐃᑕᖏᑦ ᓯᑑᕗᑦ ᐊᒻᒪᓗ ᕼᐋᒧᓪᑕᓐ 2013).

ᐃᓗᓕᖏᓐᓂ
ᐊᐃᕕᖃᕐᓂᖏᑦ ᑲᓇᑕᐅᑉ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐊᓂᒃ ᐊᕕᒃᓯᒪᖕᒪᑕ

ᒪᕐᕈᖕᓄᑦ ᑎᒥᒥᐅᑕᖏᓐᓂᒃ ᐃᓕᑕᕆᔭᐅᓯᒪᔾᔪᑎᖃᖅᑐᓂᒃ ᐃᓚᒌᖏᓐᓂᖅ, ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ 7-ᖑᓗᑎᒃ ᓇᔪᖅᑕᐅᓂᖏᑦ ᐃᖕᒥᒎᖓᓪᓗᑎᒃ. ᖁᒃᑎᒃᑐᕐᒥᐅᑕᐅᓂᖏᑦ ᐊᐃᕖᑦ ᐱᑕᖃᓲᑦ ᑕᒫᓂ ᓴᓐᓂᕈᑎᐅᑉ ᐃᒪᖓᓂ (BB−ᒥ), ᑕᓪᓗᕈᑎᐅᑉ ᐃᑭᕋᓴᖓᑕᐱᖓᓇᖅᐸᓯᐊᓂ Jones Sound−ᒥ, WJS), ᐊᒻᒪᓗ ᐃᒫᓗᖕᒥ (Penny Strait−ᒥ) ᐊᒻᒪᓗ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ (PS-LS−ᒥ); ᕿᑎᖅᐸᓯᐊᓃᓐᓂᖏᑦ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐊᐃᕕᖃᕐᓂᖏᑦ ᐱᑕᓖᑦ ᑕᒫᓂ ᐅᐊᓐᓇᖅᐸᓯᐊᓂ ᐊᒻᒪᓗ ᕿᑎᖅᐸᓯᐊᓂᒃ ᓯᑯᓯᓚᕐᒥᐅᓂ (N-FB, C-FB-ᒥ) ᐊᒻᒪᓗ ᕼᐊᑦᓴᓐᐲᖑᓂᖓᑕ ᑕᓯᐅᔭᕐᔪᐅᖑᓂᖓᓂ−ᕿᑭᖅᑕᓗᐃᑦ ᐊᑯᑭᑦᑐᐃᓪᓗ ᐊᑯᓐᓂᖏᓐᓂ ᐃᒪᕐᓂ (HB-DS-ᒥ), ᐊᐃᕕᖃᕐᕕᐅᓂᖏᓐᓂᒃ (ᑕᑯᔭᑦᑎᑎᔾᔪ 1−ᒥ). ᒫᓐᓇᐅᓕᖅᑐᖅ ᑕᐃᒃᑯᐊ ᐃᓚᒌᖕᒪᖔᑕ ᐱᖓᓲᔪᖅᑐᓂᒃ 6−ᓂᒃ ᐊᕕᒃᑐᖅᓯᒪᓂᖏᑦ ᐊᐃᕖᑦ ᓂᒋᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᑲᓇᖕᓇᖅᐸᓯᐊᓂᒃ ᕼᐊᑦᓴᓐ ᐲᒥ S&E-HB−ᖑᓂᕋᖅᑕᐅᔪᒥ) ᖃᐅᔨᒪᔭᐅᖏᓚᑦ.
ᐊᕙᑎᖏᓐᓂᒃ ᐱᐅᓯᑐᖃᕆᔭᐅᔪᓂᒃ ᐊᒻᒪᓗ ᐃᖃᓗᓕᕆᓂᕐᒥᒃ ᐊᐅᓚᑦᑎᔨᐅᓂᖏᑦ ᑕᐃᒃᑯᓇᓂ ᐃᖃᓗᓕᕆᔨᕐᔪᐊᑯᓐᓂᒃ ᐊᒻᒪᓗ ᑕᕆᐅᕐᒥᐅᑕᓕᕆᔨᒃᑯᓐᓂᒃ ᑲᓇᑕᒥ (ᑕᕆᐅᕐᒥᐅᑕᓕᕆᔨᒃᑯᑦ) ᐊᐱᕆᓚᐅᖅᐳᑦ ᖃᐅᔨᓴᖅᑎᓂᒃ ᐱᓕᕆᖁᓪᓗᑎᒃᐊᒥᓲᓂᖏᓐᓂᒃ ᓇᓚᐅᑖᕈᑎᖏᓐᓂᒃ, ᐊᒻᒪᓗ ᐱᑕᖃᐃᓐᓇᕈᓐᓇᕐᓂᖏᓐᓄᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᕕᐅᓇᔭᕐᓂᖏᓐᓂᒃ ᐅᖃᐅᔨᒋᐊᕈᑎᒃᓴᖅᓯᐅᕈᑕᐅᓗᑎᒃ ᑲᓇᑕᒥᐅᑕᓂᒃ ᐊᐃᕕᖃᕐᕕᐅᓂᖏᓐᓂᒃ. ᓯᕗᓂᐊᒍᑦ ᐅᖃᐅᔾᔨᒋᐊᕈᑎᒃᓴᐅᓂᐊᓚᐅᖅᑐᑦ ᑲᔪᓯᑦᑎᐊᕈᓐᓇᓚᐅᖏᑦᑐᑦ ᐱᔾᔪᑕᐅᓂᖏᓐᓄᑦ ᐱᑕᖃᖏᓂᖏᓐᓂᒃ ᓇᓚᐅᑦᑖᕈᑎᑦ ᐊᒻᒪᓗ ᐱᑕᖅᑕᐅᖃᑦᑕᕐᓂᖏᓐᓄᑦ ᖃᐅᔨᒪᔭᐅᓂᖏᑦ ᐊᒥᒐᓗᐊᓚᐅᕐᒪᑕ (ᓯᑑᕗᑦ 2008). ᖃᖓᑕᓲᒃᑯᑦ ᖃᐅᔨᓂᐊᖅᑕᐅᓚᐅᖅᑐᑦ 2007−ᒥᒃ 2011−ᒧᑦ ᐱᔪᓐᓇᐅᑕᐅᓕᓚᐅᖅᑐᑦ ᓈᓴᖅᑕᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᐊᒥᓲᑎᒋᔪᔭᕐᓂᖏᓐᓄᑦ ᓇᓚᐅᑖᕈᑎᖏᑦ ᑕᒪᐃᓐᓄᑦ ᐊᐃᕕᖃᕐᕕᐅᔪᑦ, ᐱᖏᑕᑐᐊᕆᓪᓗᒋᑦ ᑕᐃᒃᑯᐊ ᓂᒋᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᑲᓇᖕᓇᖅᐸᓯᐊᓂᒃ S&E-HB−ᖑᓂᕋᖅᑕᐅᔪᒥ) ᕼᐊᑦᓴᓐ ᐲ−ᒥ (ᑕᓯᐅᔭᕐᔪᐊᖓᓃᑦᑐᑦ) . ᑖᒃᑯᐊ ᑎᑎᖃᐃᑦ ᓇᐃᓈᖅᓯᒪᓪᓗᑎᒃ ᐅᓂᒃᑲᖅᐳᑦ ᓇᓚᐅᑦᑖᕈᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᐱᑕᖃᖅᑎᒋᓂᖏᓐᓂᒃ ᐊᒻᒪᓗ ᐃᓚᒋᓕᓚᐅᖅᑕᖏᓐᓂᒃ ᓇᓚᐅᑦᑖᕈᑎᓂᒃᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᑦ ᓴᕿᑎᑕᐅᓚᐅᖅᑐᓂᒃ ᐊᑐᖅᑕᐅᓪᓗᑎᒃ ᑕᐃᒃᑯᐊ

ᑕᒪᒃᑭᖅᑐᓂᒃ ᐆᒪᔪᐃᑦ ᑐᖁᑕᐅᓯᒪᔪᓐᓇᖅᑎᒋᓂᖏᓐᓂᒃ ᓈᓴᐅᓯᕆᓪᓗᑎᒃ, ᐱᖓᓲᔪᖅᑐᓄᑦ 6−ᖑᔪᓄᑦ ᐊᐃᕕᖃᕐᕕᐅᔪᓄᑦ ᐊᔾᔨᒌᖏᑦᑑᑎᐅᔪᓂ.

ᑖᒃᑯᐊ ᖃᐅᔨᓴᖅᑎᓂᒃ ᐅᖃᐅᔾᔨᒋᐊᕈᑎᐅᓂᕐᒧᑦ ᐅᓂᒃᑳᓕᐊᑦ ᓴᓇᔭᐅᓯᒪᔪᑦ ᐊᒃᑐᐱᕆ 29−ᒥᒃ ᓄᕕᐱᕆ 2, 2012-ᒧᑦ, ᐊᕐᕋᒍᑕᒪᖅ ᑲᑎᒪᖃᑦᑕᕐᓂᖏᓐᓂᒃ ᑲᓇᑕᓕᒫᒥ ᑕᕆᐅᕐᒥᐅᑕᐃᑦ ᐳᐃᔩᑦ ᕿᒥᕐᕈᐊᖅᑕᐅᓂᖏᓐᓄᑦ ᐱᓕᕆᔨᖏᓐᓄᑦ ᑲᑎᒪᔨᕋᓛᓄᑦ (NMMPRC−ᑯᓐᓄᑦ). ᐊᓯᒃᑲᓐᓂᖏᑦ ᐅᖃᓕᒫᒐᓕᐊᒃᓴᐃᑦ ᐊᓯᖏᑦ ᑖᒃᑯᓇᓂᖓ ᐱᓕᕆᐊᖑᓯᒪᓂᖏᓐᓂᒃ ᓴᕿᑎᐅᔪᒫᕐᒥᔪᑦ
ᐊᑐᐃᓐᓇᐅᓕᕈᑎᒃ ᐅᕙᓂ ᖃᕆᑕᐅᔭᒃᑯᑦ ᑕᑯᓂᐊᖅᑕᐅᕝᕕᖓᓐᓂᒃ ᐃᖃᓗᓕᕆᔨᕐᔪᐊᒃᑯᑦ ᑕᕆᐅᒥᐅᑕᓕᕆᔨᒃᑯᓪᓗᑦ ᖃᐅᔨᓴᖅᑕᐅᓯᒪᔪᓂᒃ ᐅᖃᐅᔾᔨᒋᐊᖅᑏᑦ ᐱᓕᕆᕝᕕᒃᓴᖏᓐᓂᒃ ᐅᓂᒃᑳᕈᑎᓂᒃ
ᑕᑯᓂᐊᖅᑕᐅᕝᕕᖕᒥᒃ DFO Science Advisory Schedule

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

2

ᐊᑐᐃᓐᓇᐅᓕᑐᐊᕈᑎᒃ.

ᓇᐃᓈᖅᑕᐅᓯᒪᓪᓗᑎᒃ

• ᓴᖅᑭᑕᐅᓯᒪᓂᖏᑦ ᒫᓐᓇᓵᖅ ᖃᖓᑕᓲᒃᑯᑦ ᓈᓴᖅᑕᐅᓚᐅᖅᑐᓂᒃ ᐊᒻᒪᓗ ᖁᒻᒧᐊᒃᑎᑕᐅᓯᒪᔪᑎᒍᑦ
ᐊᔾᔨᓕᐅᖅᑕᐅᓯᒪᔪᓂᒃ ᖃᐅᔨᓴᖅᑕᐅᓚᐅᖅᑐᑦ ᐊᑐᖅᑕᐅᓚᐅᖅᑐᑦ ᓇᓚᐅᑦᑖᕈᑕᐅᓂᕐᒧᑦ ᐱᑕᖃᖅᑎᒋᓂᖏᓐᓄᑦ ᐊᐃᕖᑦ 6−ᖑᔪᓂᒃ ᐊᕕᒃᑐᖅᓯᒪᓂᐅᔪᓃᑦᑐᑦ, ᐃᓚᒋᔭᐅᓐᓂᖏᓐᓂ ᖁᑦᑎᒃᑐᕐᒥ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑑᑉ ᕿᑎᖅᐸᓯᐊᓂᒃ ᐱᑕᖃᕐᓂᖏᓐᓂᒃ ᑲᓇᑕᒥ.

• ᐊᕕᒃᑐᖅᓯᒪᓪᓗᑎᒃ ᐊᑐᓂ ᐊᒥᓲᑎᒋᓂᖏᓐᓂᒃ ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᔪᑦ ᓇᒫᖕᓂᐊᖅᑐᔮᖏᑦᑐᑦ,
ᐱᔾᔪᑕᐅᓪᓗᑎᒃ ᑕᒪᒃᑭᖅᑕᐅᓯᒪᖏᓐᓂᖏᓐᓂᒃ ᓈᓴᐃᕕᐅᔪᓐᓇᖅᑐᑦ, ᐊᕐᕋᒍᒐᓴᐅᔪᓂᓗ ᐊᓯᔾᔨᖃᑕᕐᓂᖏᓐᓂᒃ ᓇᓃᖃᑕᕐᓂᖏᓐᓂᒃ ᐊᐃᕖᑦ, ᓯᓚᐅᓪᓗ ᓯᑰᓪᓗ ᖃᓄᐃᓕᖓᓂᖏᓐᓄᑦ.
• ᐱᐅᔫᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᐱᑕᖃᖅᑎᒋᓂᖏᑦ ᖁᒻᒧᐊᒃᑎᑕᐅᓯᒪᔪᓂᒃ ᐃᓕᐅᖃᐃᕝᕕᐅᓯᒪᔪᓂᒃ
ᖃᐅᔨᒪᔾᔪᑏᑦ, ᐊᑐᖅᑕᐅᖃᑦᑕᖅᓯᒪᔪᑦ ᐋᕿᒋᐊᕈᑕᐅᓂᕐᒧᑦ ᓈᓴᐃᒃᑲᓐᓂᕈᑕᐅᔪᓐᓇᕐᓂᕐᒧᑦ ᐆᒪᔪᕐᓂᒃ ᓈᓴᖅᑕᐅᔪᓐᓇᓚᐅᖏᑦᑐᓂᒃ, ᐊᔾᔨᒌᖃᑦᑕᖏᓐᓂᖏᓐᓂᒃ ᓈᓵᖅᑕᐅᓯᒪᓚᐅᖅᑐᓂᒃ ᐊᒻᒪᓗ ᑕᐅᕙᓂ ᓯᑯᓯᓚᖅᐸᓯᖕᓂ, ᑕᒪᐃᓐᓂᒃ ᓈᓴᐃᓯᒪᖏᑦᑐᒃᓴᐅᓚᐅᖅᑐᓂᒃ. ᖁᒻᒧᐊᒃᑎᑕᐅᓯᒪᔪᑎᒍᑦ ᖃᐅᔨᒪᔾᔪᑏᑦ ᐱᑕᖃᕆᐊᖃᓲᖑᕗᑦ ᐋᕿᒋᐊᖅᑕᐅᓯᒪᑦᑎᐊᒃᑲᓐᓂᖅᓱᑎᒃ ᓇᓴᐅᓯᕆᔾᔪᑕᐅᓂᕐᒧᑦ ᐃᒪᕐᒦᑦᑐᓐᓃᖅᓯᒪᓂᖏᓐᓂᒃ ᓄᓇᓐᓂᖏᓐᓂ.

• ᑐᓐᖓᕕᐅᓂᖏᓐᓄᑦ ᑲᑎᖅᓱᖅᑕᐅᓯᒪᓂᖏᑦ ᓄᐊᑕᐅᓯᒪᓂᖏᑦ ᐊᒥᓲᑎᒋᓂᖏᓐᓂᒃ ᓇᓚᐅᑦᕈᑏᑦ,
ᑕᐃᒃᑯᐊ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓚᐅᖅᐳᑦ ᐊᑐᓂ ᐊᕕᒃᑐᖅᓯᒪᓂᖏᓐᓂᒃ ᐊᑐᖅᑕᐅᓪᓗᑎᒃ ᑕᒪᒃᑭᖅᑐᓂᒃ ᐆᒪᔪᐃᑦ ᑐᖁᑕᐅᓯᒪᔪᓐᓇᖅᑎᒋᓂᖏᓐᓂᒃ
ᐊᑐᓂ ᐊᐃᕕᖃᕐᕕᐅᔪᓂ ᐃᖕᒥᒎᖅᑐᓂ, ᑕᐃᒃᑯᐊ ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᓂᖏᑦ ᐊᔾᔨᒌᖏᓐᓂᖃᕐᓂᖏᓐᓂᒃ ᐅᖃᐅᓯᐅᓯᒪᔪᓂᒃ ᐱᑕᖅᑕᐅᖃᑦᑕᖅᓯᒪᓃᒃᑐᓂᒃ ᐊᑐᖅᓱᑎᒃ ᑲᓇᑕᒥ, ᐊᑯᓐᓂᖏᓐᓂᒃ ᐊᕐᕋᒍᓂᒃ
1985−ᒥ ᐊᒻᒪᓗ 2010−ᒥ ᐊᐃᕝᕙᒃᑕᐅᓯᒪᓂᖏᑦ ᐅᓂᒃᑳᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ.
• ᓴᓐᓂᕈᑎᐅᑉ ᐃᒪᖓᓂ (BB−ᒥ) ᐊᐃᕕᖃᕐᓂᖏᑦ ᓇᓚᐅᑦᑖᖅᑕᐅᓚᐅᖅᑐᑦ ᐊᒥᓲᓂᖃᕐᓂᖏᓐᓂᒃ
ᖃᓂᒋᔭᖏᓐᓂᑦᑐᓂᒃ 1,250-ᓂᒃ, 2009−ᖑᑎᓪᓗᒍ, ᑐᖓᕕᐅᓪᓗᑎᒃ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᑦ 571-ᖑᓚᐅᖅᑐᑦ, ᓴᕿᑎᑦᑎᔾᔪᑕᐅᓪᓗᑎᒃ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ 10-11−ᓂᒃ.

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

3

• ᑕᓪᓗᕈᑎᐅᑉ ᐃᑭᕋᓴᐅᓂᖓᑕ ᐱᖓᓇᖅᐸᓯᐊᓂ ᐃᒪᕐᓂ WJS-ᒥ, ᐊᐃᕕᖃᕐᓂᖏᑦ
ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᓚᐅᖅᑐᑦ 503−ᒥᒃ, (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ
0.07−ᒥ) 2008−ᒥ, ᑐᖓᕕᐅᓪᓗᑎᒃ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᑦ 404-ᖑᓚᐅᖅᑐᑦ, ᓴᕿᑎᔾᔪᑕᐅᓪᓗᑎᒃ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ 7-8−ᓂᒃ.

• ᐃᒫᓗᖕᒥ (Penny Strait−ᒥ) ᐊᒻᒪᓗ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ (PS-LS−ᒥ) ᐊᐃᕕᖃᕐᓂᖏᑦ
ᓇᓚᐅᑦᑖᖅᑕᐅᓚᐅᖅᑐᑦ ᐊᒥᓲᓂᖃᕐᓂᖅ ᐊᑯᓐᓂᖏᓐᓂᒃ 661−ᓂᒃ
(ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ 2.08−ᓂ) ᐊᒻᒪᓗ 727−ᓂᒃ (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ 0.07−ᒥ) ᐊᐃᕕᖃᕐᓂᖏᑦ 2009−ᒥ, ᐊᒻᒪᓗ ᓈᓴᖅᑕᐅᒐᒥᒃ ᐊᒥᓲᓂᖃᕐᓂᖏᑦ 557−ᓂᒃ, ᓴᕿᑦᑎᓗᑕᐅᓚᐅᖅᑐᑦ ᐊᒥᓲᑎᒋᓂᖏᓐᓂᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ 10-12-ᓂᒃ.

• ᐊᕕᒃᑐᖅᑕᐅᓯᒪᔪᓂᒃ ᓈᓴᖅᑕᐅᓯᒪᔪᓐᓇᕐᓂᖏᑦ ᐱᔭᐅᖃᑦᑕᖅᓯᒪᓂᖏᑦ ᐊᖑᓇᓱᒃᑎᓄᑦ, ᐱᖓᓱᓂᒃ
ᑕᐃᒃᑯᓇᓂ ᐃᓚᒋᔭᐅᖃᑕᐅᔪᑦ ᖁᑦᑎᒃᑐᕐᒥᐅᑕᓂ ᐊᔪᕐᓇᓚᐅᕐᒪᑕ ᓈᓴᖅᑕᐅᔪᓐᓇᕐᓂᖏᑦ, ᑭᓯᐊᓂ
25-ᓄᑦ ᐊᕐᕋᒍᓄᒃ ᐱᑕᖅᑕᐅᓯᒪᑎᒋᕙᓚᐅᕐᓂᖏᑦ ᐅᖃᐅᓯᐅᖃᑦᑕᖅᓯᒪᔪᑦ ᐊᑐᖅᑕᐅᓚᐅᖅᑐᑦ

ᐊᒥᓲᓂᖏᑦ ᑲᓇᑕᒥ (ᖃᓂᒋᔭᖏᓃᓚᐅᖅᑐᑦ 14-ᓂᒃ) ᐊᑖᓃᒻᒪᑦᑕ ᐊᑦᑎᖕᓂᖅᓴᐅᓪᓗᑎᒃ ᑲᑎᑕᐅᒐᓗᐊᕈᑎᒃ ᐊᒥᓲᑎᒋᓂᖏᓐᓂᒃ ᐱᑕᖅᑕᐅᔪᓐᓇᕋᔭᖑᐊᖅᑐᓂᒃ (27-31−ᓂᒃ)
ᑐᑭᓯᓇᖅᓯᓚᐅᕐᒪᑕ.
• ᓇᓚᐅᑖᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᐊᒥᓲᑎᒋᓂᖏᓐᓂᒃ ᑕᒪᐃᓐᓂᒃ ᑲᑎᖓᓪᓗᑎᒃ ᐅᐊᓐᓇᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ
ᕿᑎᖅᐸᓯᐊᓂᒃ ᓯᑯᓯᓚᕐᒥᐅᓂ (N&C-FB)−ᒥ 2011 ᐊᔾᔨᒋᖏᓐᓂᖃᖃᑦᑕᓚᐅᖅᑐᑦ 8,153−ᓂᒃ (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ 0.07-ᒥ) ᑎᑭᐅᒪᔪᓂᒃ 13,452−ᓄᑦ (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ 0.43−ᒥ) ᐊᐃᕕᖏᑦ, ᑐᖓᕕᐅᓪᓗᑎᒃ ᓇᓴᖅᑕᐅᓯᒪᓚᐅᕐᓂᖏᑦ ᐊᒥᓲᓂᖃᖅᑐᓂᒃ 6,043−ᒥᒃ ᐊᒻᒪᓗ 4,484, ᐊᑐᓂ, ᐊᑐᖅᑕᐅᓪᓗᑎᒃ ᐊᔾᔨᒌᖏᑦᑑᑦ ᐅᓪᓗᖏᑦ ᐊᒻᒪᓗ ᐊᔾᔨᒌᖏᑦᑑᑏᑦ ᐋᕿᒋᐊᕈᑕᐅᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᔪᓂᒃ. ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᓂᖏᑦ, ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᑦ 106-166−ᓄᑦ ᑎᑭᐅᒪᓇᔭᕈᑎᒃ, 95% ᐳᓴᓐᑎᒦᑎᒋᔪᓂᒃ ᖁᕝᕙᕆᐊᕈᑕᐅᔪᓐᓇᕐᒪᑕ ᐊᑐᖅᑕᐅᓪᓗᑎᒃ ᒫᓐᓇᓵᖅ ᐱᑕᖅᑕᐅᖃᑦᑕᖅᓯᒪᑎᒋᓂᖏᑦ (ᖃᓂᒋᔭᖏᓐᓄᐊᕈᑕᐅᔪᓐᓇᖅᓱᑎᒃ 185−ᓄᑦ), ᐱᖃᓯᐅᔾᔭᐅᖏᑎᓪᓗᒋᑦ ᐊᓯᖏᓐᓄᑦ ᐃᓄᐃᑦ ᐱᔾᔪᑕᐅᓪᓗᑎᒃ ᑐᖁᕋᖅᑎᑕᐅᖃᑕᖅᓯᒪᓂᖏᑦ. ᐱᐅᓂᖅᓴᓂᒃ ᓈᓴᖅᑕᐅᑦᑎᐊᒃᑲᓐᓂᕆᐊᖃᖅᐳᑦ ᐊᒻᒪᓗ ᖃᐅᔨᒪᔭᐅᑦᑎᐊᒃᑲᓐᓂᕆᐊᖃᖅᓱᑎᒃ

ᒫᓐᓇᐅᔪᖅ ᐱᑕᖅᑕᐅᖃᑦᑕᕐᓂᖏᑦ, ᐊᒻᒪᓗ ᖃᐅᔨᓴᖅᑕᐅᑦᑎᐊᒃᑲᓐᓂᕆᐊᖃᕐᓂᖏᑦ ᑕᐅᕙᓂ ᐊᐃᕖᑦ ᓅᕝᕕᒋᕙᒃᑕᖏᑦ ᐃᓗᐊᓂ ᓯᑯᓯᓚᕐᒥᐅᓂ ᐊᒻᒪᓗ ᑭᐴᑎᔭᐅᓯᒪᔪᓐᓇᕐᓂᖏᓐᓂ
ᐊᒥᓲᓂᖅᓴᐅᖃᑕᖅᑐᓂᒃ ᑕᐅᕙᓂ ᑲᖏᖅᓱᐊᓗᐊᓂᒃ ᑕᓯᐅᔭᕐᔪᐊᕐᒥᒃ−ᕿᑭᖅᑕᓗᐃᑦ ᐊᑯᑭᑦᑐᐃᓪᓗ ᐊᑯᓐᓂᖏᓐᓂ ᐃᒪᕐᓂ (HB-DS-ᒥ).
• ᐃᓚᐃᓐᓇᑯᓗᖏᑦ ᕼᐊᑦᓴᓐᐱᑉ ᑲᖏᖅᓱᐊᓗᐊᓂᒃ ᑕᓯᐅᔭᕐᔪᐊᕐᒥᒃ−ᕿᑭᖅᑕᓗᐃᑦ ᐊᑯᑭᑦᑐᐃᓪᓗ

ᐊᑯᓐᓂᖏᓐᓂ ᐃᒪᕐᓂ (HB-DS-ᒥ), ᐊᒥᓲᑎᒋᓂᖏᑦ ᑕᐅᕙᓂ ᓈᓴᖅᑕᐅᓯᒪᓚᐅᖅᐳᑦ. ᐊᒥᓲᑎᒋᓂᖏᑦ ᐊᐃᕖᑦ ᐊᐅᔭᒃᑯᑦ ᐅᐸᒃᓯᒪᕝᕕᒋᕙᑕᖏᑦ ᑕᐅᕙᓂ Hᐅᐊᑉ ᐲᖑᓂᕋᖅᑕᐅᔪᒥᒃ ᑕᓯᐅᔭᖓᓂ Hoare Bay−ᒥ ᑕᐅᕙᓂ ᓂᒋᖅᐸᓯᐊᑕ ᑲᓇᖕᓇᖓᓂᒃ ᕿᑭᖅᑖᓘᖕᒥᒃ, 2007-ᖑᑎᓪᓗᒍ, ᓇᓚᐅᑦᑖᖅᑕᐅᓚᐅᖅᑐᑦ ᐊᑯᓐᓂᖏᓐᓃᓐᓂᖅ 1,420 (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ 0.07-ᒥ) ᐊᒻᒪᓗ 2,533−ᓂᒃ (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ 0.17-ᒥ). ᑐᖓᕕᐅᓪᓗᑎᒃ ᓈᓴᖅᑕᐅᑏᑦ 1,056. ᓈᓴᖅᑕᐅᓯᒪᓂᖏᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ 18-38−ᒦᑦᐳᑦ, ᐊᒻᒪᓗ ᓄᓇᓕᖕᒥᐅᓄᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᑦ 36-ᒦᑦᑐᑦ.
• ᕿᑎᖅᐸᓯᐊᓃᑦᑐᓂᒃ ᐅᑭᐅᖅᑕᖅᑑᓂᕐᒥ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑕᒪᑭᕆᐊᖅᓯᒪᓪᓗᑎᒃ ᐊᒥᒐᓗᐊᖅᐳᑦ
ᓈᒪᔪᓂᒃ ᖃᐅᔨᒪᔾᔪᑎᒃᓴᓂᒃ ᑐᑭᓕᐅᑦᑎᐊᕈᓐᓇᕋᔭᖅᑐᓂᒃ ᐊᒥᓲᓂᖏᓐᓂᒃ

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

4

ᓇᓚᐅᑦᕈᓐᓇᑕᐅᔪᓐᓇᕐᓂᕐᒧᑦ ᐊᒻᒪᓗ ᑕᐃᒃᑯᓇᖓᑦ ᑐᖓᕕᖃᕐᓗᑎᒃ ᐅᖃᐅᔾᔨᒋᐊᕈᑕᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᐊᒥᓲᑎᒋᓂᖏᓐᓂᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕋᔭᕐᓂᖏᓐᓂᒃ.

• ᑕᒪᐃᓐᓂᑦᑎᐊᖅ ᓇᓗᓇᖅᑐᖃᖅᑐᖅ; ᐊᒥᓲᓂᖏᓐᓂᒃ ᓈᓴᖅᑕᐅᓯᒪᔪᑦ ᓇᒻᒪᖏᓗᐊᕐᒪᑕ;
ᑕᒪᕐᒥᑲᓴᒻᒪᕇᑦ ᓈᓴᖅᑕᐅᒋᐊᓚᐅᖅᑐᑦ ᑕᒪᒃᑭᖅᓯᒪᓚᐅᖏᒻᒪᑕ ᓈᓴᖅᕕᐅᔭᕆᐊᖃᖅᑐᓂᒃ; ᑕᒪᕐᒥᑲᓴᐃᑦ ᐋᕿᒋᐊᕈᑎᓄᑦ ᓈᓴᐅᓯᕆᔭᐅᓂᖏᑦ ᐊᑐᖅᓯᒪᓪᓗᑎᒃ ᐊᒥᓲᖏᑦᑐᓂᒃ ᐆᒃᑐᕐᕕᐅᓯᒪᔪᓂᒃ ᐅᕝᕙᓗᓐᓃᑦ ᖃᔨᐅᒪᔾᔪᑎᒃᓴᓂᒃ, ᐊᓯᖏᓂᖔᖅᓯᒪᔪᓂᒃ ᐊᒻᒪᓗ ᐊᓯᖏᓐᓂᒃ ᖃᖓᐅᓂᖃᓚᐅᕐᓂᖏᓐᓂᒃ
ᐊᑐᖅᓱᑎᒃ; ᐱᑕᖅᑕᐅᖃᑦᑕᖅᓯᒪᓂᖏᓂᒃ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᑦ ᐊᒥᒐᓗᐊᕐᒥᔪᑦ ᐊᒻᒪᓗ ᐊᓐᓇᐃᔭᐅᓯᒪᔪᑦ ᔭᒐᐃᔭᐅᖃᑦᑕᖅᓯᒪᔪᓗᓐᓃᑦ ᐅᖃᐅᓯᐅᓯᒪᖏᒻᒪᑕ ᐅᕝᕙᓗᓐᓃᑦ ᖃᐅᔨᒪᔭᐅᖏᒻᒪᑕ.

• ᓴᓐᓂᕈᑎᐅᑉ ᐃᒪᖓᓂ (BB−ᒥ), ᐊᒻᒪᓗ ᐱᖓᖕᓇᖅᐸᓯᐊᓂ ᐊᑯᑭᑦᑐᕐᒥᐅᑦ−ᓂᒋᐊᑕ
ᑲᓇᖕᓇᖅᐸᓯᐊᓃᑦᑐᑦ ᕿᑭᖅᑖᓘᑉ ᐃᓚᒋᔭᐅᓂᖏᑦ ᑕᐃᒃᑯᓄᖓ ᕼᐊᑦᓴᓐ ᐲ−ᒥᑦᑐᓄᑦ ᑕᓯᐅᔭᕐᔪᐊᕐᒥᒃ−ᕿᑭᖅᑕᓗᐃᑦ ᐊᑯᑭᑦᑐᐃᓪᓗ ᐊᑯᓐᓂᖏᓐᓂ ᐃᒪᕐᓂ (HB-DS-ᒥ) ᐊᐃᕕᖏᓐᓄᑦ, ᐱᑕᖃᕐᓂᖏᑦ ᐊᐃᕕᖅᓯᐅᕐᕙᐅᖃᑦᑕᕐᒥᖕᒪᑕ ᐊᑯᑭᑦᑐᕐᒥᐅᑕᓄᑦ. ᐅᖓᑖᓄᑦ
ᖃᐅᔨᓴᖅᑕᐅᒃᑲᓐᓂᕆᐊᖃᖅᑐᑦ ᓇᒧᖓᐅᖃᑕᕐᓂᖏᑦ ᑲᓇᑕᒥ ᐊᑯᑭᑦᑐᕐᒥᐅᑕᓄᓪᓗ ᐊᐃᕖᑦ ᐊᒻᒪᓗ ᑕᒪᐃᓐᓂᒃ ᐊᖑᓇᓱᒃᑎᓄᑦ ᐱᑕᖅᕕᐅᖃᑦᑕᕐᒥᔪᑦ ᑕᒪᐃᓐᓂᒃ ᓄᓇᓕᒡᔪᐊᕐᓂᒃ
ᖃᐅᔨᒪᔭᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᐱᑕᕆᐊᖃᖅᑐᑦ.
• ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᓂᖏᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓐᓄᑦ ᐅᓂᒃᑲᖅᑕᐅᓯᒪᓂᖏᑦ
ᐊᕕᒃᑐᖅᑕᐅᓯᒪᔪᓐᓇᖏᒻᒪᑕ ᐊᔾᔨᒌᖏᑦᑑᑎᐅᔪᓂᒃ ᐱᑕᖃᖃᑦᑕᕐᓂᖏᓐᓂᒃ ᐃᓄᖕᓄᑦ
ᐱᔾᔪᑕᐅᓂᖏᓐᓄᑦ ᐱᑕᖃᕈᓐᓃᕈᑕᐅᓯᒪᓂᖏᓐᓂᒃ. ᑕᒪᐃᓐᓂᒃ ᐊᐃᕕᖃᕐᕕᐅᓂᖏᓐᓂᒃ,
ᐊᓯᒃᑲᓐᓂᖏᓐᓂᒃ ᖃᐅᔨᒪᔭᐅᕆᐊᖃᕆᕗᑦ ᐊᖑᓇᓱᒃᑕᐅᑎᒋᖃᑕᕐᓂᖏᓐᓂᒃ,
ᐊᖑᓇᓱᒃᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᐊᓐᓇᐃᔭᐅᖃᑕᕐᓂᖏᓐᓂᒃ ᔭᒐᐃᔭᐅᖃᑕᕐᓂᖏᓐᓂᓗ, ᐊᓯᖏᓐᓂᒡᓗ
ᐃᓄᐃ ᐱᔾᔪᑕᐅᓂᖏᓐᓄᑦ ᑐᖁᕋᕈᑕᐅᕙᒃᑐᓂᒃ ᓲᕐᓗ ᓄᓗᐊᕐᓂᒃ ᓂᒐᕕᑕᐅᓯᒪᖃᑦᑕᕐᓂᖏᓐᓄᑦ
ᐊᒻᒪᓗ ᐅᒥᐊᕐᔪᐊᕐᓄᑦ ᑐᓗᖅᑕᐅᖃᑕᕐᓂᖏᓐᓄᑦ ᐅᓂᑳᖅᑕᐅᔪᓐᓇᓚᐅᖏᓐᓂᖏᓐᓂᒃ ᐊᒥᐊᒃᑯᓯᒪᖃᑕᕐᓗᑎᒃ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᐅᖃᐅᔾᔨᒋᐊᕈᑎᒃᓴᐃᑦ.

ᓯᕗᓪᓕᖅᐹᑦ ᐅᖃᐅᓯᒃᓴᐃᑦ

ᐊᐃᕕᓕᕆᓂᖅ ᑲᓇᑕᐅᑉ ᐅᑭᐅᖅᑕᖅᑐᐸᓯᐊᓂ ᐊᕕᒃᑐᖅᑕᐅᓯᒪᖕᒪᑕ ᒪᕐᕈᖕᓄᑦ ᑎᒥᒃᑯᑦ ᐃᓕᑕᕆᔭᐅᔾᔪᑎᖃᕐᓂᕋᖅᑕᐅᔪᓂᒃ ᐱᑕᖃᖅᑐᓂᒃ ᐊᒻᒪᓗ 7-ᖑᓪᓗᑎᒃ ᐊᐃᕕᖅᑕᖃᖅᐸᖕᓂᖏᑦ, ᑐᖓᕕᐅᓪᓗᑎᒃ ᑎᒥᖏᓐᓂᒃ ᐃᓕᑕᕆᔭᐅᔪᓐᓇᐅᑎᖏᑦ, ᐃᒃᑎᖏᓐᓃᑦᑐᓂᒃ, ᖁᒻᒧᐊᒃᑎᑕᐅᓯᒪᔪᑎᒍᑦ ᓇᓗᓇᐃᒃᑯᑕᖃᖅᑎᑕᐅᓂᖏᑦ, ᐊᕙᑎᒥᐅᑕᕆᔭᕆᐊᖃᖅᑕᖏᓐᓂᒡᓗ ᖃᐅᔨᓴᖅᑕᐅᓂᖏᓐᓂᒃ. ᐃᖃᓗᓕᕆᔨᕐᔪᐊᒃᑯᑦ ᑕᕆᐅᕐᒥᐅᑕᓕᕆᔩᓪᓗ ᖃᐅᔨᓴᖅᑎᖏᑦ ᐊᐱᕆᓚᐅᕐᒪᑕ ᖃᐅᔨᓴᖁᔭᐅᓗᑎᒃ ᐱᑕᖃᖅᑎᒋᓂᖏᓐᓂᒃ ᐊᒥᓲᓂᖏᓐᓂᒃ ᓇᓚᐅᑖᕈᑎᓂᒃ ᐊᒻᒪᓗ ᐊᒥᐊᒃᑯᔭᐅᑦᑎᐊᕈᓐᓇᖅᑐᒥᒃ ᐱᑕᖅᕕᐅᔪᓐᓇᖅᑎᒋᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᐊᑐᓂ ᑕᐃᒃᑯᐊ 7−ᖑᔪᑦ ᐊᐃᕕᖃᕐᕕᐅᔪᑦ; ᓴᓐᓂᕈᑎᐅᑉ ᐃᒪᖓᓂ BB−ᒥ, ᑕᓪᓗᕈᑎᐅᑉ ᐃᑭᕋᓴᖓᑕ ᐱᖓᓇᖅᐸᓯᐊᓂ Jones Sound−ᒥ, WJS−ᒥ, ᐊᒻᒪᓗ ᐃᒫᓗᖕᒥ (Penny Strait−ᒥ) ᐊᒻᒪᓗ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ, PS-LS−ᒥ ᖁᑦᑎᒃᑐᕐᒥᐅᓂ; ᕿᑎᖅᐸᓯᐊᓃᓐᓂᖏᑦ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐊᐃᕕᖃᕐᓂᖏᑦ ᐱᑕᓖᑦ ᑕᒫᓂ ᐅᐊᓐᓇᖅᐸᓯᐊᓂ ᐊᒻᒪᓗ ᕿᑎᖅᐸᓯᐊᓂᒃ ᓯᑯᓯᓚᕐᒥᐅᓂ N-FB, C-FB-ᒥ ᐊᒻᒪᓗ ᕿᑭᖅᑖᓘᑉ ᕼᐊᑦᓴᓐ ᐲᒥᓗ ᑕᓯᐅᔭᐊᕐᔪᐊᖑᓂᖓᓂ ᐃᑭᕋᓴᖕᒥ−ᕿᑭᖅᑕᓗᐃᑦ ᐊᑯᑭᑦᑐᐃᓪᓗ ᐊᑯᓐᓂᖏᓐᓂ ᐃᒪᕐᓂ (HB-DS-ᒥ), ᐅᑭᐅᖅᑕᖅᑑᑉ ᕿᑎᖅᐸᓯᐊᓂᒃ; ᐊᒻᒪᓗ ᑕᐃᒃᑯᐊ ᓂᒋᖅᐸᓯᐊᓂᑐᑦ ᐊᒻᒪᓗ ᑲᓇᖕᓇᖅᐸᓯᐊᓂᒃ ᕼᐊᑦᓴᓐ ᐲᑉ S&E-HB−ᒥ ᑕᓯᐅᔭᕐᔪᐊᖑᓂᖓᓂᓲᑦ. ᑕᐃᒃᑯᐊ ᓂᒋᖅᐸᓯᐊᓂᑐᑦ ᐊᒻᒪᓗ ᑲᓇᖕᓇᖅᐸᓯᐊᓂᒃ ᕼᐊᑦᓴᓐ ᐲᑉ S&E-HB−ᒥ ᐃᓱᒪᒋᔭᐅᓯᒪᖏᑦᑐᑦ ᑖᒃᑯᓇᓂ ᐅᓂᒃᑳᓕᐊᖑᔪᓂᒃ ᐱᔾᔪᑕᐅᓂᖏᓐᓄᑦ ᖃᐅᔨᒪᔾᔪᑎᒃᓴᖃᖏᒻᒪᑕ ᐱᑕᖃᖅᑎᒋᓂᖏᓐᓂᒃ.

ᐊᐃᕖᑦ ᓇᓂᑐᐃᓐᓈᖃᑕᕐᒪᑕ ᑕᒫᓂ ᑲᓇᖕᓇᖅᓯᐊᓂᒃ ᑲᓇᑕᐅᑉ ᐅᑭᐅᖅᑕᖅᑐᖓᓂᒃ, ᐊᒥᓲᓂᖃᕋᓲᖑᓪᓗᑎᒃ ᖁᓕᒐᓴᐅᓂᖏᓃᖃᑦᑕᖅᑐᓂᒃ ᑕᐅᓴᖏᓐᓂᑦᑐᓂᒃ. ᐊᐅᔭᐅᓂᖓᓂ, ᐊᐃᕖᑦ ᓯᓈᓂᓕᖃᑦᑕᖅᒪᑕ ᐅᕝᕙᓗᓐᓃᑦ

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

5

ᓯᑯᖃᕋᓐᓃᖅᐸᑦ, ᑕᒫᓂ ᓄᓇᒥᓲᖑᓪᓗᑎᒃ. ᓇᓚᐅᑦᑖᖅᑕᐅᓂᖏᓐᓄᑦ ᐊᐃᕖᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ, 6−ᖑᔪᓄᑦ ᐊᐃᕕᖃᕐᕕᐅᕙᒃᑐᓂ, ᖃᖓᑕᓲᒃᑯᑦ ᓈᓴᖅᑕᐅᓚᐅᖅᑐᑦ ᐱᑕᖃᕐᓂᖏᑦ ᓄᓇᒥᓐᓂᖏᓐᓂᒃ ᐊᐃᕖᑦ, ᐊᕐᕋᒍᓂ ᐊᑯᓐᓂᖏᓐᓂᒃ 2007 ᐊᒻᒪᓗ 2011-ᒥ. ᓄᓈᖅᓯᒪᓂᖏᓐᓂᒃ ᓈᓴᖅᑕᐅᖃᑕᕐᓂᖏᑦ ᐊᐃᕕᑦ ᐱᑕᖃᕐᓂᖏᑦ ᐃᓱᒪᒋᔭᐅᓯᒪᔪᑦ ᐱᐅᔫᓂᖏᓐᓂᒃ ᓇᓴᐃᓂᕐᒧᑦ ᑭᓯᐊᓂ ᓱᓕ ᐊᑐᖅᑕᐅᒐᔪᒃᓯᒪᖏᒻᒪᑕ. ᑕᒪᒃᑯᐊ ᐱᔾᔪᑕᐅᓂᖏᓐᓄᑦ, ᐊᒥᓱᒐᓴᖕᓂᒃ ᑐᑭᓯᓂᐊᕐᕕᖃᖅᓯᒪᒋᐊᓚᐅᖅᐳᑦ ᓈᒪᔪᓂᒃ ᓈᓴᕈᑎᒃᓴᓂᒃ, ᖃᐅᔨᔭᐅᑦᑎᐊᕈᓐᓇᖁᓪᓗᒋᑦ ᐊᔪᓇᖏᓐᓂᓕᒫᖏᓐᓂᒃ. ᖃᐅᔨᔭᐅᓯᒪᔪᑦ ᖁᒻᒧᐊᒃᑎᑕᐅᓯᒪᔪᑎᒍᑦ ᓇᓗᓇᐃᒃᑯᑦᑎᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᐊᑐᖅᑕᐅᓚᐅᖅᑐᑦ ᑕᐃᔅᓱᒪᓂ ᐊᒻᒪᓗ ᐊᑐᖅᑕᐅᓗᑎᒃ ᓇᓃᖏᓐᓂᒃ

ᖃᐅᔨᒪᓂᕐᒧᑦ ᐃᓚᖏᓐᓂᒃ ᓈᓴᖅᑕᐅᓂᖏᓐᓂᒃ, ᐊᒻᒪᓗ ᐊᓯᖏᓐᓂᒃ ᐊᐃᕕᕐᓂᒃ ᖃᐅᔨᓴᖅᑕᐅᓯᒪᓂᑰᔪᓂᒃ, ᐊᑐᖅᑕᐅᓚᐅᖅᑐᑦ ᐋᕿᒋᐊᕈᑕᐅᓂᖏᓐᓄᑦ ᓄᓈᖅᓯᒪᓂᖏᓐᓂᒃ ᓈᓴᐃᓂᕐᒧᑦ, ᐱᖃᓯᐅᔾᔭᐅᒋᐊᕐᓂᖏᓐᓄᑦ ᑕᐃᒃᑯᐊ ᑐᖓᐅᑕᐅᓚᐅᖅᑐᑦ ᓈᓴᖅᑕᐅᓂᖏᓐᓂᒃ. ᓇᓚᐅᑦᑖᕈᑎᖃᓕᓚᐅᖅᐳᑦ ᐱᑕᖃᕐᓂᖏᓐᓂᒃ, ᑕᒪᕐᒥᒃ ᓈᒻᒫᓂᖏᑦᑐᐃᓐᓇᐅᓪᓗᑎᒃ ᐃᓚᐃᓐᓇᖏᓐᓂᒃ ᓈᓴᐃᓯᒪᓂᖏᓐᓄᑦ.

ᓇᐅᑦᑎᖅᑐᑦᑎᐊᖅᑐᒻᒪᕆᐊᓘᒋᐊᖅᓯᒪᓪᓗᑎᒃ, ᐊᐃᕖᑦ ᐱᓪᓗᒋᑦ ᖃᐅᔨᒪᔾᔪᑏᑦ ᓇᒻᒪᖏᓗᐊᖅᐳᑦ. ᐃᖃᓗᓕᕆᔨᕐᔪᐊᒃᑯᑦ ᑕᕆᐅᕐᒥᐅᑕᐃᓪᓗ ᐊᑐᖅᐸᒃᑐᑦ ᑕᒪᒃᑭᖅᑐᓂᒃ ᐆᒪᔪᐃᑦ ᑐᖁᑕᐅᓯᒪᔪᓐᓇᖅᑎᒋᓂᖏᓐᓂᒃ ᐅᖃᐅᔾᔨᒋᐊᕈᑕᐅᖃᑕᕐᓂᕐᒧᑦ ᐊᒥᐊᒃᑯᖃᑦᑎᐊᕐᓗᑎᒃ

ᐱᑕᖅᑕᐅᓯᒪᕝᕕᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᑕᕆᐅᕐᒥᐅᑕᐃᑦ ᐆᒪᔪᐃᑦ ᐳᐃᔩᑦ, ᑕᐃᒃᑯᐊᓗ ᓈᒻᒪᖏᓗᐊᖅᓱᑎᒃ. ᑕᒪᒃᑭᖅᑐᓂᒃ ᐆᒪᔪᐃᑦ ᑐᖁᑕᐅᓯᒪᔪᓐᓇᖅᑎᒋᓂᖏᓐᓂᒃ ᐃᓄᐃᑦ ᐱᔾᔪᑕᐅᓂᖏᓐᓄᑦ ᐊᓐᓇᐃᔭᐅᕙᖕᓂᖏᓐᓂᒃ ᔭᒐᐃᔭᐅᕙᖕᓂᖏᓐᓂᒡᓗ ᑕᐃᒪᐃᓂᖏᓐᓄᑦ ᓇᓚᐅᑦᑖᖅᑕᐅᓂᖏᓐᓂᒃ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᐱᑕᖃᕈᑕᐅᓲᖑᕗᑦ ᑕᒪᐃᓐᓄᑦ ᐃᓄᖕᓄᑦ ᐱᔾᔪᑕᐅᔪᓄᑕᐅᖅ ᑐᖁᑕᐅᓯᒪᖃᑕᐅᓂᖏᓐᓂᒃ ᐱᑕᖃᕈᓃᖅᓯᒪᓂᖏᓂᓗᓐᓃᑦ ᑐᖁᕋᖅᓯᒪᓂᖏᓐᓂᒃ, ᑕᐃᒫᒃ ᐱᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒥᓱᕈᖅᐸ5ᓕᐊᕋᐅᔭᐃᓐᓇᕈᓐᓇᕐᓂᐊᕐᒪᑕ. ᑖᒃᑯᐊ ᑎᑎᕋᖅᓯᒪᔪᑦ ᓴᕿᑕᐅᓯᒪᕗᑦ ᐊᑐᖅᑕᐅᓪᓗᑎᒃ ᒫᓐᓇᓵᖅ ᖃᖓᑕᓲᒃᑯᖅᑐᓂᒃ ᓈᓴᖅᑕᐅᓚᐅᕐᓂᖏᓐᓂᒃ ᓇᓚᐅᑖᕈᑎᒃᓴᖏᓐᓄᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᐊᐃᕕᖃᕐᕕᐅᓂᖏᑦ, ᐊᑐᕐᓗᑎᒃ ᑕᒪᒃᑭᖅᑐᓂᒃ ᐆᒪᔪᐃᑦ ᑐᖁᑕᐅᓯᒪᔪᓐᓇᖅᑎᒋᓂᖏᓐᓂᒃ.

ᑐᑭᓯᓂᐊᖅᑕᐅᓯᒪᓂᖏᑦ

ᓯᑑᕗᒃᑯᒃ ᐊᒻᒪᓗ ᕼᐋᒧᓪᑕᓐᑯᒃ ᐅᖃᓕᒫᒐᓕᐊᕕᓂᖏᑦ ᐊᒥᓲᓂᒋᓂᖏᓐᓂᒃ ᓇᓚᐅᑦᑖᕈᑎᖏᑦ (2013−ᒥ) ᑕᑯᔭᒃᓴᓕᐊᖑᓯᒪᔪᑦ ᑕᑯᑎᑦᑎᔾᔪᑎᓂᒃ ᓈᓴᐅᑎᓕᖕᓂᒃ 1−ᒦᑦᑐᑦ. ᑕᒪᒃᑯᐊ ᐊᔾᔨᒌᖏᓐᓂᖏᑦ ᖃᐅᔨᒪᔾᔪᑎᒃᓴᓕᐊᖑᓯᒪᔪᑦ ᐊᔾᔨᒌᖏᑦᑑᑎᓂᒃ ᐃᓗᓕᖃᖅᐳᑦ ᐊᔾᔨᒌᖏᑦᑑᑎᐅᒐᒥᒃ ᐊᐃᕕᖅᑕᓖᑦ ᓇᓃᓂᖏᑦ, ᐊᒻᒪ ᐅᖓᓯᒌᒃᓯᒪᓪᓗᑎᒃ ᐊᕐᕌᒎᖏᑦ, ᐊᔪᕐᓇᕈᑕᐅᓪᓗᑎᒃ ᐊᑐᖅᑕᐅᑦᑎᐊᕈᓐᓇᓚᐅᕐᓂᖏᓐᓂᒃ ᑕᐃᒪᖓᑦ ᓇᓴᐅᓯᕆᔾᔪᑎᓴᐃᑦ ᐊᐃᕖᑦ ᐊᒥᓲᓂᖏᓐᓂᒃ. ᑐᖓᕕᐅᒐᒥᒃ ᑕᒪᒃᑯᐊ ᓇᓚᐅᑦᑖᖅᑕᐅᓂᖏᓐᓄᑦ ᓈᓴᐅᓯᕆᔾᔪᑎᐅᕙᒃᑐᑦ ᑕᐃᔭᐅᔪᑦ ᐃᓱᖃᖅᑎᑕᐅᓪᓗᑎᒃ ᐊᒥᓲᓂᖅᐹᖃᖅᑎᑕᐅᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ, ᐊᒥᓲᖏᓐᓂᖅᓴᐅᓈᖅᑎᖅᑕᐅᓯᒪᓂᖏᑦ MCP-ᑯᑦ, ᐱᓕᕆᐊᖑᖃᑦᑕᖅᓯᒪᓪᓗᑎᒃ ᓈᓴᖅᑕᐅᓂᖏᓐᓄᑦ ᐊᐃᕖᑦ ᐊᔾᔨᓕᐅᖅᑕᐅᓯᒪᔪᓂᒃ ᖃᖓᑕᓲᒃᑯᑦ ᓈᓴᐃᔭᖅᑐᖅᓯᒪᓂᖏᓐᓂᒃ. ᐃᓱᖃᖅᑎᑕᐅᓪᓗᑎᒃ ᐊᒥᓲᓂᖅᐹᖑᔪᓐᓇᖅᑎᑕᐅᓂᖏᓐᓂᒃ ᓇᓴᐅᓯᕆᓂᕐᒥᒃ ᐊᑦᑎᖕᓂᖅᓴᓂᒃ ᑐᖓᐅᑎᓯᒪᔾᔪᑕᐅᓲᖑᕗᑦ ᐊᒥᓲᓂᕆᓛᑦᑖᕋᔭᖑᐊᖅᑕᖏᓐᓂᒃ, ᐱᔾᔪᑕᐅᓪᓗᑎᒃ ᐃᓚᖏᑦ ᐊᐃᕖᑦ ᓈᓴᖅᑕᐅᔪᓐᓇᖅᓯᓚᐅᖏᒻᒪᑕ ᑕᑯᔭᐅᕌᓂᒍᓐᓇᓚᐅᖏᓐᓂᖏᓐᓄᑦ ᐅᕝᕙᓗᓐᓃᑦ ᐃᒪᕐᒥ ᐊᖅᑲᖅᓯᒪᓚᐅᕐᓂᖏᓐᓄᑦ ᓈᓴᖅᑕᐅᓕᖅᑎᓪᓗᒋᑦ. ᐊᒥᓲᖏᓐᓂᖅᓴᐅᓈᖅᑎᖅᑕᐅᓯᒪᓂᖏᑦ ᐋᕿᒋᐊᖅᑕᐅᖃᑦᑕᓚᐅᖅᑐᑦ ᑭᖑᓂᐊᒍᑦ ᐊᑐᖅᑕᐅᓪᓗᑎᒃ ᖁᒻᒧᐊᒃᑎᑕᐅᓯᒪᔪᑎᒍᑦ ᓇᓗᓇᐃᒃᑯᑦᑎᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᐊᐅᓚᕙᖏᓂᖏᑦ ᓇᒧᖓᐅᕙᓪᓕᐊᕙᖕᓂᖏᓐᓂᒃ ᐱᐅᓯᖃᕐᓂᖏᓐᓂᒃ ᒪᓕᒃᑕᐅᓯᒪᓪᓗᑎᒃ ᐊᒻᒪᓗ ᓈᓴᖅᑕᐅᔾᔪᑕᐅᓕᖅᓱᑎᒃ ᓈᓴᖅᑕᐅᖃᓯᐅᔾᔭᐅᓯᒪᖏᑦᑐᓄᑦ

ᐊᐃᕕᕐᓄᑦ (ᓯᑑᕗᑦᑯᒃ ᕼᐋᒧᓪᑕᓐᑯᑦ ᐅᓂᒃᑳᓕᐊᖏᑦ, 2013−ᒥ). ᐊᕕᒃᑐᖅᓯᒪᓂᖏᓐᓂ ᑲᑎᖓᐅᕐᓂᖏᓐᓂ ᐊᐃᕕᖃᕐᕕᐅᔪᓂ, ᑕᐃᒃᑯᐊ ᐋᕿᒋᐊᖅᑕᐅᓯᒪᓕᖅᓱᑎᒃ ᐊᒥᓲᓐᖏᓐᓂᖅᓴᐅᓈᖅᑕᐅᓯᒪᓚᐅᕐᓂᖏᑦ ᓇᓚᐅᑦᑖᕈᑏᑦ ᐊᑐᖅᑕᐅᓚᐅᖅᐳᑦ ᓈᓴᖅᑕᐅᔪᓐᓇᕐᓂᖏᓐᓄᑦ ᑕᒪᒃᑭᖅᑐᓂᒃ ᐆᒪᔪᐃᑦ

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

6

ᑐᖁᑕᐅᓯᒪᔪᓐᓇᖅᑎᒋᓂᖏᓐᓂᒃ ᓈᓵᖅᑕᐅᔪᓐᓇᕐᓂᖏᓐᓄᑦ ᐊᕐᕋᒍᑕᒫᖅ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ (ᑕᑯᑎᑎᔾᔪᑦ ᓈᓴᐅᑎᓕᖕᓂᒃ 1). ᓯᕗᓪᓕᖅᐹᕐᒥᒃ ᖃᐅᔨᒋᐊᖅᑕᐅᒐᒥᒃ ᐊᒥᐊᒃᑯᖃᑦᑎᐊᕈᓐᓇᖅᑎᒋᓇᔭᕐᓂᖏᓐᓂᒃ ᐊᑐᓂ ᐊᐃᕕᖃᕐᕕᐅᔪᑦ, ᑕᐃᒃᑯᐊ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᖃᓄᖅ ᐊᔾᔨᖃᖏᑎᒋᖕᒪᖔᑕ ᖃᐅᔨᓴᖅᑕᐅᓚᐅᖅᑐᑦ ᓴᓂᐊᓂᒃ ᑕᐃᒃᑯᐊ ᓄᓈᖅᑕᐅᓵᖅᓯᒪᓚᑖᓚᐅᕐᓂᖏᓐᓂᒃ ᐱᑕᖅᑕᐅᓯᒪᓚᐅᖅᑐᓂᒃ ᖃᐅᔨᒪᔭᐅᓚᐅᖅᑐᓂᒃ ᐊᕐᕋᒍᓂᒃ 1985-2010−ᒥ (ᑕᑯᑎᑎᔾᔪᑦ ᓈᓴᐅᑎᓕᖕᓂᒃ 2) ᖃᐅᔨᒪᔭᐅᓪᓗᑎᒃ (ᐅᔾᔨᖅᑐᖅᑕᐅᓯᒪᓪᓗᑎᒃ) ᑕᒪᒃᑯᐊ ᐱᖃᓯᐅᔾᔨᓯᒪᖏᓐᓂᖏᓐᓂᒃ ᐊᓯᖏᓐᓂᒃ ᐃᓄᐃᑦ ᐱᔾᔪᑕᐅᓂᖏᓐᓄᑦ ᑐᖁᖃᑦᑕᖅᓯᒪᖕᒥᔪᓂᒃ. ᓲᕐᓗ ᐆᒃᑑᑎᒋᓗᒍ, ᑕᐃᒪᖓᑦ, 2008−ᖑᓚᐅᖅᑐᒥᒃ, ᐱᓕᕆᔨᐅᔪᑦ ᐊᖏᔫᑎᓂᒃ ᐱᕙᓪᓕᐊᓯᒪᑐᐃᓐᓇᓕᕐᒪᑕ ᐊᐃᕕᖅᑕᖃᕐᕕᐅᕙᖕᓂᖏᓐᓂᒃ ᐅᕝᕙᓗᓐᓃᑦ ᐱᓕᕆᕙᓪᓕᐊᑐᐃᓐᓇᕐᓂᐊᖅᓱᑎᒃ, ᑐᖁᔾᔪᑕᐅᔪᓐᓇᖃᑦᑕᖅᑐᓂᒃ ᐊᐃᕕᕐᓄᑦ (ᓯᑑᕗᑦ ᐱᓕᕆᖃᑎᖏᓄᓪᓗ ᐅᓂᒃᑳᓕᐊᕕᓃᑦ 2012). ᑕᐃᒪᓕ ᑐᑭᓕᐅᖅᑕᐅᓂᖏᓐᓂᒃ ᐊᔪᓐᓇᕐᓂᖏᓐᓄᑦ ᑕᒪᒃᑭᖅᑐᓂᒃ ᐆᒪᔪᐃᑦ ᑐᖁᑕᐅᓯᒪᔪᓐᓇᖅᑎᒋᓂᖏᓐᓂᒃ ᐱᖃᓯᐅᔾᔨᓯᒪᓲᖑᖕᒪᑕ, ᑕᒪᐃᓐᓂᒃ ᐆᒪᔪᓕᕆᓪᓗᓂ, ᑐᖁᔪᕕᓂᐅᓂᓕᒫᖏᓐᓂᒃ ᖃᓄᑐᐃᓐᓇᖅ. ᑭᓯᐊᓂᓕ ᑕᐃᒪ ᖃᐅᒪᔭᐅᑦᑎᐊᓕᕈᑎᒃ ᐊᖑᓇᓱᒃᑕᐅᓯᒪᓂᖏᓐᓄᑦ ᑐᖁᑕᐅᖃᑦᑕᕐᓂᖏᓐᓂᒃ (ᓄᓈᖅᑕᐅᓯᒪᔪᑦ ᐊᓐᓇᐃᔭᐅᓯᒪᔪᑦ ᔭᒐᐃᔭᐅᔪᓪᓗ), ᑕᒪᕐᒥᒡᓗ ᓂᒐᕕᖃᑕᐅᓯᒪᔪᑦ ᓄᓗᐊᕐᓂᒃ, ᐅᒥᐊᕐᔪᐊᕐᓄᓪᓗ ᐱᓂᕐᓗᒃᑕᐅᓯᒪᔪᑦ ᑐᓗᖅᑕᐅᖃᑦᑕᓯᒪᓂᖏᓐᓂᒃ, ᐊᒻᒪᓗ ᐊᓯᖏᓐᓂᒃ ᑐᖁᔾᔪᑕᐅᕙᖕᒥᔪᓂᒃ, ᐊᔪᕐᓇᕐᓂᐊᖅᐳᖅ ᑐᑭᓕᐅᕈᓐᓇᕐᓂᖅ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ, ᐃᖕᒥᒎᖅᑐᐃᓐᓇᐅᑎᑦᑎᓗᓂ ᐃᓄᖕᓄᑦ ᐱᓕᕆᖃᖑᓯᒪᔪᕕᓂᐅᔪᓂᒃ, ᓲᕐᓗ ᓄᓈᖅᑕᐅᓯᒪᓕᖅᑐᓂᒃ ᑐᖁᑕᐅᓯᒪᔪᓂᒃ ᐅᕝᕙᓗᓐᓃᑦ ᐅᒥᐊᕐᔪᐊᕐᒧᑦ ᑐᓗᖅᑕᐅᓯᒪᔪᕕᓂᐅᔪᓂᒃ.

ᑕᐃᒃᑯᓂᖓ ᑐᑭᓕᐅᕐᓂᖏᓐᓂᒃ ᑕᒪᒃᑭᖅᑐᓂᒃ ᐆᒪᔪᐃᑦ ᑐᖁᑕᐅᓯᒪᔪᓐᓇᖅᑎᒋᓂᖏᓐᓂᒃ ᑐᑭᓯᓂᐊᕈᑎᖏᑦ ᐊᑐᖃᑦᑕᓚᐅᖅᑐᑦ ᐊᒥᒐᖅᓯᓗᐊᖅᑐᓂᒃ ᓈᒻᒫᓂᖏᑦᑐᓂᒃ ᖃᐅᔨᒪᔾᔪᑎᐅᖕᒪᑕ ᐊᐃᕕᕐᓂᒃ. ᐊᑐᖅᑕᐅᓚᐅᖅᑐᑦ ᓈᓴᖅᑕᐅᓂᖏᓐᓄᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᐊᑐᓂ ᐊᐃᕕᖃᕐᕕᐅᔪᓂ ᐃᖕᒥᒎᖅᓯᒪᓪᓗᑎᒃ ᐃᒪᐃᓕᖓᑎᑕᐅᓚᐅᖅᐳᑦ ᓈᓴᖅᑕᐅᓂᖏᓐᓂᒃ.

ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᑦ TAR =
ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᑐᖁᑕᐅᔪᓐᓇᕐᓂᖏᑦ PBR ᐊᒥᐊᒃᑯᓯᒪᑦᑎᐊᕈᓐᓇᕐᓂᐊᖅᑐᓂᒃ =
Nmin ᐊᒥᓲᖏᓐᓂᖅᐸᖑᓈᖅᑕᐅᓯᒪᔪᓐᓇᕐᓂᖏᓐᓂᒃ•
Rmax ᐊᒥᓲᓂᖅᐸᕆᔭᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ•
0.5 •
FR ᓇᓗᓇᐃᒃᑯᑕᓕᒃ ᐊᒥᓱᕈᖅᓰᐊᖑᓂᖏᓐᓂᒃ

ᐃᒪᐃᓕᖓᖕᒪᑦ: Nmin−ᒥᒃ ᓇᓗᓇᐃᒃᑯᑕᓕᒃ ᓇᓚᐅᑦᑖᕈᑕᐅᖕᒪᑦ ᐊᒥᓲᖏᓂᖅᐹᕆᔭᐅᓂᕋᖅᑕᐅᓂᖏᓐᓂᒃ ᐊᐃᕖᑦ. ᓇᓚᐅᑦᑖᖅᑕᐅᓂᖏᑦ ᑖᒃᑯᐊ ᓇᓗᓇᐃᒃᑯᑕᓖᒃ Nmin−ᖏᑦ ᓇᓴᐃᓂᐅᓚᐅᕐᒪᑕ ᐱᓪᓚᑕᖅᑐᓂᒃ ᐊᒥᓲᖏᓐᓂᖅᓴᐅᓈᖅᑎᖅᑕᐅᓯᒪᓂᖏᓂᒃ) ᐅᕝᕙᓗᓐᓃᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᐋᕿᒋᐊᖅᑕᐅᓯᒪᔪᓂᒃ ᑕᐃᒃᑯᓂᖓ ᓄᓈᖅᓯᒪᓂᖏᓐᓂᒃ ᓈᓴᖅᑕᐅᓯᒪᓚᐅᕐᓂᖏᓐᓂᒃ ᐊᐃᕖᑦ (ᐊᒥᓲᖏᓐᓂᖅᓴᐅᓈᖅᑎᖅᑕᐅᓯᒪᓂᖏᑦ (MCPHO).

Rmax−ᒥᒃ ᓇᓗᓇᐃᒃᑯᑕᓕᒃ ᑐᑭᖃᖅᐳᖅ ᐊᒥᓲᓂᖅᐸᕆᔭᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ
ᐊᒥᓱᕈᕆᐊᖅᓯᒪᑎᒋᓐᓂᖏᒃ ᐊᐃᕕᖅᑕᖃᕐᓂᖏᓐᓂᒃ.

FR−ᒥᒃ ᓇᓗᓇᐃᒃᑯᑕᓕᒃ ᐊᒥᓱᕈᖅᓰᐊᖑᓂᖏᓐᓂᒃ ᓇᓗᓇᐃᒃᑯᑕᐅᓂᖅ, ᖃᐅᔨᒪᔭᐅᖏᑐᓂᒃ ᓱᓕ ᐊᒥᓲᓕᕈᓐᓇᕐᓂᖏᓐᓂᒃ, ᑕᐃᒫᒃ ᐊᔭᐅᖅᑕᐅᓯᒪᖁᓪᓗᒋᑦ ᐊᒥᓱᕈᖅᓯᐊᕆᔭᐅᔪᓐᓇᕐᓂᖏᑦ ᑕᐃᒃᑯᐊ ᐊᒥᓲᓂᖃᑦᑎᐊᕐᓂᕐᒧᑦ ᑎᑭᐅᒪᓕᕐᓗᑎᒃ (ᐅᓂᒃᑳᓕᐊᖏᑦ ᕖᑦ ᐊᒻᒪᓗ ᐋᖏᓯᒃᑯᒃ, 1997−ᒥ). ᖃᐅᔨᒪᔭᐅᖏᑦᑐᖃᖅᑎᓪᓗᒋ6 ᐊᒥᓲᑎᒋᓂᖏᑦ ᐱᑕᖃᕈᓃᖅᓯᒪᓂᖏᓐᓂᒃ ᐆᒫᔪᐃᑦ

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

7

ᑐᖁᖅᒪᓂᖏᓐᓂᒃ, ᐊᒥᓱᕈᖅᓯᐊᕆᔭᐅᓂᖏᓐᓄᑦ ᐋᕿᐅᒪᔭᐅᓕᖃᑦᑕᖅᑐᖅ ᓈᓴᐅᑎᓕᖕᓂᒃ 1−ᒥᒃ ᐳᖅᑐᓂᓕᖕᒥᒃ .

Rmax−ᒥ ᓈᓴᐅᑎᓕᕆᔾᔪᑎᓂᒃ ᐊᒥᓲᓂᖅᐸᕆᔭᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᐋᕿᒃᑕᐅᓯᒪᓚᐅᖅᑐᑦ 0.07−ᒥᒃ, ᓈᓴᐅᓯᕆᔾᔪᑕᐅᓪᓗᓂ ᑐᑭᑖᕈᑕᐅᔪᓐᓇᕐᓂᕐᒧᑦ ᓱᒃᑲᓕᔪᒥᒃ ᐊᒥᓱᕈᖅᐸᓪᓕᐊᓂᖏᓐᓂᒃ ᐅᐊᓕᓂᖅᐸᓯᖕᒥᖔᓲᑦ ᐊᐃᕖᑦ, (ᖃᓗᓈᑎᑐᑦ ᖃᐅᔨᓴᖅᑏᑦ ᐅᖃᐅᓯᐊᒍᑦ Odobenus rosmarus divergens) (ᐅᓂᑳᓕᐊᖏᑦ ᓯᑑᕗᑦ ᐊᒻᒪᓗ ᕼᐋᒧᓪᑕᓐ, 2013). ᐊᒥᓲᓂᖅᐸᕆᔭᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᐋᕿᐅᒪᔭᐅᓚᐅᖅᑐᑦ ᐃᒪᓐᓇ• 0.5 • FR -ᒥᒃ ᓇᓗᓇᐃᒃᑯᑕᖃᖅᑎᑕᐅᓗᑎᒃ, ᓴᕿᑎᑎᓚᐅᕐᓂᖏᓐᓄᑦ ᐊᒥᓲᔪᓐᓃᖅᐸᓪᓕᐊᓯᒪᖏᓐᓂᖏᓐᓂᒃ. ᑕᐃᕙᓂᓕ ᑕᓪᓗᕈᑎᐅᑉ ᐃᑭᕋᓴᖓᑕ ᐱᖓᓇᖅᐸᓯᐊᓂ ᐃᒪᕐᓂᒃ WJS−ᒥ, ᐊᒻᒪᓗ ᐃᒫᓗᖕᒥ (Penny Strait−ᒥ) ᐊᒻᒪᓗ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ (PS-LS−ᒥ) ᐊᐃᕕᖏᓐᓂ, ᓯᑑᕗᑦᑯᑦ ᐱᓕᕆᖃᑎᖏᓪᓗ (2013a−ᒥ) ᖃᐅᔨᓚᐅᖏᑦᑐᑦ ᓈᓴᐅᓯᕆᓂᖏᓐᓂᒃ ᐊᒥᓲᔪᓐᓃᖅᐹᓪᓕᖅᓯᒪᓂᖏᓐᓂᒃ ᐊᐃᕖᑦ ᐊᕐᕋᒍᐃᑦ ᐊᑯᓐᓂᖏᓐᓂᒃ 1977−ᒥ ᐊᒻᒪᓗ 1990−ᖏᓐᓂᒃ, ᐊᒻᒪᓗ ᑕᐃᒪᐃᓐᓂᖏᓐᓄᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᓈᓴᖅᑕᐅᓕᓚᐅᕆᕗᑦ ᐋᕿᒃᑕᐅᓪᓗᑎᒃ FR−ᒥᒃ ᐊᒥᓱᕈᖅᓰᐊᖑᓂᖏᓐᓂᒃ ᐋᕿᒃᑕᓚᐅᖅᑐᖅ = 1.0−ᒧᑦ, ᑕᐃᒃᑯᓇᓂ ᐊᐃᕕᖃᕐᕕᐅᓂᖏᓐᓂᒃ (ᑕᑯᑎᑦᑎᔾᔪᑦ ᓈᓴᐅᑎᓕᖕᓂᒃ 1-ᒥᒃ).

ᓈᒻᒫᓂᖏᓗᐊᕐᒪᑕ ᖃᐅᔨᒪᔾᔪᑏᑦ ᐊᑐᐃᓐᓴᐅᔪᑦ ᐋᕿᒋᐊᖅᑕᐅᔪᓐᓇᕐᓂᖏᓐᓄᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᐱᖃᓯᐅᔾᔨᓯᒪᖃᑕᐅᔪᓐᓇᕋᔭᖅᑐᓂᒃ ᔭᒐᐃᔭᐅᖃᑕᖅᓯᒪᔪᓂᒡᓗ ᐊᓐᓇᐃᔭᐅᖃᑦᑕᖅᓯᒪᓂᖏᓐᓂᒃ. ᑕᒪᐃᓐᓂᖏᓐᓄᑦ ᐊᐃᕕᖃᕐᕕᐅᔪᓂᒃ ᐊᕕᒃᑐᖅᓯᒪᓪᓗᑎᒃ ᐊᑐᓂ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ. ᐊᔾᔨᒌᖏᓐᓂᖃᕐᓂᖏᑦ ᖃᐅᔨᓴᖅᑕᐅᓚᐅᖅᑐᑦ ᐱᑕᖅᑕᐅᓯᒪᓕᐊᓂᒃᑐᓂᒃ ᓄᓈᖅᑕᐅᓯᒫᓚᕆᓚᐅᖅᑐᓂ ᐊᐃᕕᕐᓂᒃ ᖃᐅᔨᒪᐅᔭᓚᐅᖅᑐᓂᒃ ᐅᖃᐅᓯᐅᓯᒪᑯᓪᓗᑎᒃ ᐊᕐᕋᒍᐃᑦ ᐊᑯᓐᓂᖏᓐᓂᒃ 1985 ᐊᒻᒪᓗ 2010 (ᓇᓴᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑏᑦ 2−ᒥ) ᐊᑐᖅᑕᐅᒐᔪᒃᓯᒪᓚᐅᖅᑐᓂᒃ ᐊᕐᕋᒍᓄᑦ ᑕᐃᑯᐊ ᐊᒃᓱᓪᓗᓐᓃᑦ 75% ᐳᓴᓐᑎᓃᖃᑦᑕᓚᐅᖅᑎᓪᓗᒋᑦ ᓄᓇᓖᑦ ᐃᓚᐅᖃᑦᑕᓚᐅᖅᑐᑦ ᐅᖃᐅᓯᖃᑦᑕᓚᕐᓂᖏᓐᓂᒃ ᐊᐃᕝᕙᒃᑕᐅᓯᒪᖃᑦᑕᓚᐅᖅᑐᓂᒃ .

ᖁᒃᑎᒃᑐᕐᒥᐅᓂ ᐊᐃᕕᖃᕐᓂᖏᑦ

ᓴᓐᓂᕈᑎᐅᑉ ᐃᒪᖓᓂᒃ

(ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 2). ᑕᐅᕙᓂ ᓴᓐᓂᕈᑎᐅᑉ ᐃᒪᖓᓂ ᐊᐃᕖᑦ ᓈᓴᖅᑕᐅᓚᐅᖅᑐᑦ 2009−ᖑᑎᓪᓗᒍ, ᓇᓚᐅᑖᖅᑕᐅᓪᓗᑎᒃ ᓈᓴᖅᑕᐅᓚᐅᖅᑐᑦ ᖃᓂᒋᔭᖏᓃᓐᓇᓱᒋᔭᐅᓪᓗᑎᒃ 1,250−ᓂᒃ ᐊᐃᕖᑦ, ᑐᖓᕕᐅᓪᓗᑎᒃ ᓈᓴᖅᑕᐅᓪᓚᑖᓚᐅᕐᓂᖏᑦ 571-ᓂᒃ (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 1-ᒥ). ᐋᕿᐊᖅᑕᐅᓯᒪᓂᖏᑦ ᐊᒥᓲᖏᓐᓴᐅᓈᖅᑎᖅᑕᐅᓯᒪᓂᖏᓐᓄᑦ ᓈᓴᖅᑕᐅᓚᐅᖅᑐᑦ ᐊᑐᖅᑕᐅᓚᐅᖅᑐᑦ ᖃᐅᔨᒪᔭᐅᓂᖏᓐᓂᒃ ᐱᖓᓱᓂᒃ ᐱᑕᕐᕕᐅᓯᒪᓚᐅᖅᑐᓂᒃ ᐱᖓᖕᓇᖅᐸᓯᐊᓂᒃ ᐊᑯᑭᑦᑐᕐᒥᐅᓄᑦ, ᑎᑭᓯᒪᓐᓂᕋᒥᒃ ᑲᓇᖕᓇᖅᐸᓯᐊᓄᑦ ᐊᐅᓱᐃᑦᑑᑉ ᕿᑭᖅᑖᓗᐊᓄᑦ ᑕᐃᔅᓱᒪᓂ ᓈᓴᐃᓂᖏᓐᓂᒃ (ᓯᑑᕗᑦ ᐊᒻᒪᓗ ᕼᐊᒧᓪᑕᓐ ᐅᓂᒃᑳᓕᐊᖏᑦ 2013). ᓴᕿᓚᕿᓯᒪᒧᑦ ᑕᐃᒪ ᐊᒥᓲᑎᒋᓂᖏᓐᓂᒃ ᑲᑎᓪᓗᒋ7 ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᑦ ᐋᕿᒃᑕᐅᓯᒪᓕᓚᐅᖅᑐᑦ 10-11-ᓂᒃ ᐊᐃᕖᕐᓂᒃ. ᐊᕕᒃᑐᖅᑕᐅᓯᒪᔪᓐᓇᕐᓂᖏᑦ ᑐᖁᑕᐅᖃᑕᕐᓂᖏᑦ ᐱᖓᓱᓂᒃ ᓄᓇᓕᖕᓂᒃ ᐊᐃᕕᖅᓯᐅᓯᒪᓂᖏᓐᓂᒃ ᐊᔾᔨᒌᖏᑦᑐᓂᖓᖅᑐᓂᒃ ᑐᑭᓯᓇᑲᐅᑎᒋᔪᓐᓇᖏᒻᒪᑕ, ᐱᓪᓗᒋᑦ ᓯᑕᒪᐃᓐᓇᐃᑦ 4 ᓄᓇᓖᑦ ᐊᐃᕕᖅᓯᐅᕆᐊᓲᖑᔪᓐᓇᕐᓂᖏᓐᓄᑦ ᐊᔾᔨᒌᖏᑦᑑᑎᓂᒃ ᐊᐃᕝᕙᖕᓂᐊᕐᕕᐅᕙᒃᑐᓂᒃ, ᐊᒻᒪᓗ ᐊᑕᐅᓰᓐᓇᐅᓪᓗᑎᒃ ᓄᓇᓖᑦ ᐅᖃᐅᓯᖃᖃᑦᑕᖅᑐᑦ ᐱᑕᖅᓯᒪᔭᒥᓂᒃ ᓄᓇᒥᓂ. ᐃᓱᒪᓇᖅᑐᐃᓐᓇᕐᒪᑦ ᑕᐃᒪ ᑕᒪᕐᒥᒃ ᐊᐃᕝᕙᒃᑕᐅᓯᒪᓂᖏᑦ ᓄᓇᖓᓐᓂ

ᐊᐅᓱᐃᑦᑑᑉ, ᐱᑕᖅᑕᐅᖃᑦᑕᖅᓯᒪᓂᖏᓐᓂᒃ ᑕᐅᕙᖓᑦ ᓴᓐᓂᕈᑎᐅᑉ ᐃᒪᖓᓂᒃ, ᑕᐃᒃᑯᐊ ᐱᑕᖅᑕᐅᓯᒪᒐᔪᓚᐅᕐᓂᖏᑦ ᓄᓈᖅᑕᐅᓯᒪᓪᓚᑖᓚᐅᖅᑐᓂᒃ ᐱᑕᖅᓯᒪᓂᖏᑦ 1985−ᒥᒃ 2010−ᒧᑦ (9−ᖑᓂᕋᖅᑕᐅᓕᖅᓱᑎᒃ (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 2).

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

8

ᑕᓪᓗᕈᑎᐅᑉ ᐃᑲᕋᓴᖓᑕ ᐱᖓᖕᓇᖅᐸᓯᐊᓂᒃ ᐃᒪᕐᓂᒃ

ᑕᓪᓗᕈᑎᐅᑉ ᐃᑲᕋᓴᖓᑕ ᐱᖓᖕᓇᖅᐸᓯᐊᓂᒃ ᖃᐅᔨᓴᖅᑕᐅᓚᐅᖅᐳᑦ 2008−ᒥ, ᐊᒥᓲᓂᖏᓪᓗ ᐱᑕᖃᕐᓂᖏᑦ ᑕᐅᕙᓂ ᓈᓚᐅᑦᑖᖅᑕᐅᓯᒪᓪᓗᑎᒃ 503−ᓂᒃ (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ 7% ᐳᓴᓐᑎᖏᓃᑦᑐᑦ ᐊᐃᕖᖏᑦ, ᑐᖓᕕᐅᓪᓗᑎᒃ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᑦ 404−ᓂᒃ (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 1), ᐱᑕᖃᕐᓂᖏᓐᓂᒃ ᖃᐅᔨᒪᔾᔪᑏᑦ ᓇᓗᓇᐃᒃᑯᑕᖃᓚᐳᕐᓂᖏᓐᓂᒃ ᓈᓴᖅᑕᐅᓂᖏᓐᓂᒃ ᐱᑕᖃᓚᐅᖏᒪᑦ. ᑭᓯᐊᓂ, ᐊᑐᖅᑕᐅᓪᓗᑎᒃ ᐊᒥᓲᓂᖅᐹᕆᔭᐅᔪᒥᓇᕐᓂᖏᑦ ᐊᐃᕖᑦ ᓄᓈᖅᑕᐅᓯᒪᓚᐅᖅᑐᑦ ᑐᖁᑕᐅᓯᒪᔪᓂᒃ (0.74−ᒦᑦᑐᑦ) ᓈᓴᐃᓯᒪᖏᓗᐊᖅᑐᔮᖅᑐᑦ ᐱᑕᖃ8ᖅᑎᒋᓪᓚᕆᖕᓂᖏᓐᓂᒃ. ᓈᓴᐅᖅᑕᐅᓯᒪᓂᖏᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ 7-ᒥ 8−ᓂᓗᓐᓃᑦ ᐋᖀᒃᑕᐅᓯᒪᓚᐅᖅᑑᒐᓗᐊᑦ, ᐊᒥᓱᕆᐊᖅᑕᐅᓯᒪᓕᖅᐳᑦ 17−ᓄᑦ ᑕᐃᒃᑯᐊ ᓇᓗᓇᐃᒃᑯᑕᓖᒃ FR−ᒥᒃ ᓇᓗᓇᐃᒃᑯᑕᓕᒃ ᐊᒥᓱᕈᖅᓰᐊᖑᓂᖏᓐᓂᒃ ᓇᓗᓇᐃᒃᑯᑕᐅᓂᖅ, ᐋᕿᒃᑕᓚᐅᖅᐳᑦ 1.0−ᒧᑦ (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 2). ᓄᓈᖅᑕᐅᓯᒪᒐᔪᓚᐅᕐᓂᖏᑦ ᐊᐃᕝᕙᒃᑕᐅᓯᒪᓚᐅᖅᑐᑦ ᐊᕐᕋᒍᐃᑦ ᐊᑯᓐᓂᖏᓐᓂᒃ 1985-2010−ᒥ, 9−ᖑᓚᐅᖅᑐᑦ ᐊᐃᕖᑦ, ᑭᓯᐊᓂ, ᖃᐅᔨᒪᔭᐅᒻᒪᕆᖏᒻᒪᑕ ᑕᒪᕐᒥᒃ ᐊᐃᕝᕙᒃᑕᐅᓯᒪᔪᑦ ᑕᐅᕙᓂ ᐊᐅᓱᐃᑦᑐᕐᒥᐅᑦ ᐱᔭᐅᓚᐅᕐᒪᖔᑕ) ᑕᓪᓗᕈᑎᐅᑉ ᐃᑭᕋᓴᖓᑕ ᐱᖓᓇᖅᐸᓯᐊᓂ ᐃᒪᕐᓂᒃ WJS−ᒥ, (ᐅᓪᓗᒥᒧᑦ ᑎᑭᓪᓗᒍ, ᓯᑕᒪᐃᓐᓇᐅᓚᐅᕐᒪᑕ 4 ᐊᐃᕖᑦ ᑎᑎᕋᖅᑕᐅᓯᒪᔪᕕᓃᑦ ᐅᖃᐅᓯᐅᓂᖏᓐᓄᒃ ᐱᑕᖅᑕᐅᓯᒪᓂᖏᑦ ᑕᐅᕙᖓᑦ (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 2).

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

9

ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 1. ᐊᔾᔨᒌᖏᓐᓂᖏᓐᓂᒃ ᐊᐃᕕᖅᑕᖃᕐᕕᐅᔪᓂᒃ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᐊᑐᖅᑕᐅᓪᓗᑎᒃ ᓯᑕᒪᐃᓂᑦ ᐊᔾᔨᒌᖏᑦᑑᑎᑦ ᐋᕿᒋᐊᕈᑕᐅᓂᕐᒧᑦ ᐊᑐᕈᑎᑦ ᓇᓴᐅᓯᕆᓪᓗᓂ. ᑕᒻᒪᖅᑕᖅᓯᒪᑎᒋᔪᓪᓇᕐᓂᖏᑦ ᐅᖃᐅᓯᐅᒋᕗᑦ ᑕᐃᒫᒃ ᑕᐃᔭᐅᓪᓗᑎᒃ (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ). ᑕᐃᒃᑯᓇᓂ ᑭᓯᐊᓂ ᐊᒥᓲᑎᒋᓂᖏᓐᓂᒃ ᓇᒪᐅᑦᑖᖅᑕᐅᓯᒪᔪᓂᒃ ᐅᖓᑕᐅᔾᔨᓯᒪᔪᓂᒃ ᐊᒥᓲᖏᓐᓂᖅᓴᐅᓈᖅᑎᖅᑕᐅᓯᒪᓂᖏᑦ ᐱᖃᓯᐅᔾᔭᐅᓯᒪᕗᑦ. (ᑕᑯᓗᒋᑦ ᓯᑑᕗᑦᑯᑦ ᐊᒻᒪᓗ ᕼᐋᒧᓪᑕᓐᓄᑦ ᐅᓂᒃᑳᓕᐊᕕᓂᖏᑦ (2013) ᑐᑭᓯᒋᐊᑦᑎᐊᒃᑲᓐᓂᕈᒪᒍᕕᑦ ᐅᓂᒃᑳᖅᓯᒪᑦᑎᐊᒃᖃᓐᓂᖅᑐᓂᒃ ᐃᓚᖃᖅᑐᓂᒃ ᓇᑭᑳᖕᓂᑰᓪᓚᕆᐅᖕᒪᖔᑕ ᐊᒥᓲᓂᖃᕐᓂᕋᐃᓂᕐᒧᑦ ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᓂᖏᑦ). ᑕᐃᒃᑯᐊ ᐋᕿᒋᐊᖅᑕᐅᓯᒪᓐᖏᑦᑐᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᐊᒥᓲᑎᒋᓂᖏᑦ ᓈᓴᖅᑕᐅᓚᐅᖅᐳᑦ ᐊᑐᖅᑕᐅᓪᓗᑎᒃ ᐊᒥᓲᓂᖅᐸᖑᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᐊᐃᕖᑦ ᐱᑕᖃᕐᓂᖏᑦ (ᐊᒥᓲᖏᓐᓂᖅᓴᐅᓈᖅᑎᖅᑕᐅᓯᒪᓂᖏᑦ) ᒪᓂᖓ ᓇᓗᓇᐃᒃᑯᑕᖃᖅᑎᑕᐅᔪᓂᒃ ᐊᑐᖅᓱᑎᒃ N min−ᒥᒃ ᓇᓗᓇᐃᒃᑯᑕᓖᑦ ᐊᒥᓲᓂᖏᓂᖅᐹᕆᔭᐅᓂᕋᖅᑕᐅᓂᖏᓐᓂᒃ ᐊᐃᕖᑦ. R max−ᒥᒃ ᓇᓗᓇᐃᑯᑕᓖᑦ ᐊᒥᓲᓂᖅᐸᕆᔭᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᑎᑭᐅᑎᔾᔪᑕᐅᓪᓗᑎᒃ = 7 ᐳᓴᓐᑎᓄᑦ , ᐊᒻᒪᓗ ᑕᐃᒃᑯᐊ F R−ᒥᒃ ᓇᓗᓇᐃᒃᑯᑕᓖᑦ ᓇᓗᓇᐃᒃᑯᑕᓕᒃ ᐊᒥᓱᕈᖅᓰᐊᖑᓂᖏᓐᓂᒃ ᓇᓗᓇᐃᒃᑯᑕᐅᓂᖅ = 0.5. ᐳᓴᓐᑎᒦᔅᓱᑎᒃ. ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᓈᓴᐅᑎᖏᑦ ᐃᓗᐊᓃᑦᑐᑦ ᐊᕙᓗᖑᐊᓕᖕᓂᒃ ᑎᑎᖃᓂᒃ ᓈᓴᖅᑕᐅᓯᒪᓚᐅᖅᑐᑦ ᐊᑐᖅᑕᐅᓪᓗᑎᒃ ᐊᒥᓱᕈᖅᓰᐊᖑᓂᖏᓐᓂᒃ ᓇᓗᓇᐃᒃᑯᑕᐅᓂᖅ F R = 1.0 ᓴᕿᑎᑎᓚᐅᕐᓂᖏᓐᓄᑦ ᐊᒥᓲᔪᓐᓃᖅᐸᓪᓕᐊᓯᒪᖏᓐᓂᖏᓐᓂᒃ. ᐃᓗᓕᖃᖏᑦᑐᑦ ᕿᔪᖁᑎᖑᐊᑦ ᓇᓗᓇᐃᒃᑯᑕᐅᕗᑦ ᓈᓴᐃᔾᔪᑕᐅᓚᐅᖅᑐᑦ ᐊᑐᖅᑕᐅᓚᐅᖏᓐᓂᖏᓐᓂᒃ ᐅᕝᕙᓗᓐᓃᑦ ᓇᓚᐅᑖᖅᑕᐅᓯᒪᔪᑦ ᒥᑭᓐᓂᖅᓴᐅᓚᐅᕐᓂᖏᓐᓂᒃ ᐊᒥᓲᓂᖏᓐᓂᒃ ᐊᐃᕖᑦ (ᐊᒥᓲᖏᓐᓂᖅᓴᐅᓈᖅᑎᖅᑕᐅᓯᒪᓂᖏᑦ MCP-ᖏᑦ). BC−ᒥᒃ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᔪᑦ ᐅᖃᐅᓯᖃᖅᐳᑦ ᑕᑯᔭᐅᖃᑦᑕᓚᐅᖅᑐᓂᒃ ᓈᓴᖅᑕᐅᓚᐅᖅᑐᓂᒃ.

ᐋᕿᒋᐊᖅᑕᐅᓯᒪᖏᑦᑐᑦ ᐊᒥᓲᖏᓐᓂᖅᓴᐅᓈᖅᑎᖅᑕᐅᓯᒪ
ᓂᖏᑦ HO/0.74a

ᐊᒥᓲᖏᓐᓂᖅᓴᐅᓈᖅᑎᖅᑕᐅᓯᒪᓂ
ᖏᑦ HO/% tags ᓄᓇᖅᓯᒪᓂᖏᑦ

ᐊᒥᓲᖏᓐᓂᖅᓴᐅᓈᖅᑎᖅᑕᐅ

ᓯᒪᓂᖏᑦ HO/Avgtime dry

c BCHO/0.74d

ᐊᐃᕕᖃᕐᕕᐅᔪᑦ
ᐊᕐᕋᒍᐃᓪᓗ

Nmin =
ᐊᒥᓲᖏᓐᓂᖅ
ᓴᐅᓈᖅᑎᖅᑕ
ᐅᓯᒪᓂᖏᑦ

ᐊᒥᓲᑎᒋ
ᓂᖏᑦ
ᑲᑎᓪᓗᒋ
ᑦ

ᐱᑕᖅᑕ
ᐅᔪᓐᓇᕐ
ᓂᖏᓂᒃ

ᓈᓴᖅᓯ
ᑕᐅᓯᒪᔪ
ᑦ (CV)

ᓇᓚᐅᑖ
ᑦ Nmin

ᐊᒥᓲᑎᒋ
ᓂᖏᑦ
ᑲᑎᓪᓗᒋᑦ
ᐱᑕᖅᑕᐅ
ᔪᓐᓇᕐᓂ
ᖏᓂᒃ

ᓈᓴᖅᑕ
ᐅᓯᒪᔪᑦ
(CV)

ᓇᓚᐅᑖᑦ
Nmin

ᐊᒥᓲᑎᒋᓂ
ᖏᑦ
ᑲᑎᓪᓗᒋᑦ
ᐱᑕᖅᑕᐅᔪ
ᓐᓇᕐᓂᖏ
ᓂᒃ

ᓈᓴᖅ
ᑕᐅᓯᒪ
ᔪᑦ
(CV)

ᓇᓚ

ᐅᑖᑦ
Nmin

ᐊᒥᓲᑎᒋ
ᓂᖏᑦ
ᑲᑎᓪᓗᒋᑦ
ᐱᑕᖅᑕᐅ
ᔪᓐᓇᕐᓂ
ᖏᓂᒃ

ᓈᓴᖅᑕ
ᐅᓯᒪᔪᑦ
(CV)

ᓇᓚᐅᑖ
ᑦNmin

ᐊᒥᓲᑎᒋᓂᖏ
ᑦ ᑲᑎᓪᓗᒋᑦ
ᐱᑕᖅᑕᐅᔪᓐ
ᓇᕐᓂᖏᓂᒃ

ᓴᓐᓂᕈᑎᐅᑉ ᐃᒪᖓᓂ

2009 571 10 1,251

(1.00) 621 11 1,249

(1.12) 585 10

ᑕᓪᓗᕈᑎᐅᑉ
ᐃᑭᕋᓴᖓᑕ
ᐱᖓᓇᖅᐸᓯᐊᓂ
ᐃᒪᕐᓂᒃ
2008

404 7 (14) 503

(0.07) 474 8 (17)

<ᐊᒥᓲ
ᖏᓐᓂᖅ
ᓴᐅᓈᖅ
ᑎᖅᑕᐅ
ᓯᒪᓂᖏ

ᑦ

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

10

ᐋᕿᒋᐊᖅᑕᐅᓯᒪᖏᑦᑐᑦ ᐊᒥᓲᖏᓐᓂᖅᓴᐅᓈᖅᑎᖅᑕᐅᓯᒪ
ᓂᖏᑦ HO/0.74a

ᐊᒥᓲᖏᓐᓂᖅᓴᐅᓈᖅᑎᖅᑕᐅᓯᒪᓂ
ᖏᑦ HO/% tags ᓄᓇᖅᓯᒪᓂᖏᑦ

ᐊᒥᓲᖏᓐᓂᖅᓴᐅᓈᖅᑎᖅᑕᐅ

ᓯᒪᓂᖏᑦ HO/Avgtime dry

c BCHO/0.74d

ᐊᐃᕕᖃᕐᕕᐅᔪᑦ
ᐊᕐᕋᒍᐃᓪᓗ

Nmin =
ᐊᒥᓲᖏᓐᓂᖅ
ᓴᐅᓈᖅᑎᖅᑕ
ᐅᓯᒪᓂᖏᑦ

ᐊᒥᓲᑎᒋ
ᓂᖏᑦ
ᑲᑎᓪᓗᒋ

ᑦ

ᐱᑕᖅᑕ
ᐅᔪᓐᓇᕐ
ᓂᖏᓂᒃ

ᓈᓴᖅᓯ
ᑕᐅᓯᒪᔪ
ᑦ (CV)

ᓇᓚᐅᑖ
ᑦ Nmin

ᐊᒥᓲᑎᒋ
ᓂᖏᑦ
ᑲᑎᓪᓗᒋᑦ
ᐱᑕᖅᑕᐅ
ᔪᓐᓇᕐᓂ
ᖏᓂᒃ

ᓈᓴᖅᑕ
ᐅᓯᒪᔪᑦ
(CV)

ᓇᓚᐅᑖᑦ
Nmin

ᐊᒥᓲᑎᒋᓂ
ᖏᑦ
ᑲᑎᓪᓗᒋᑦ
ᐱᑕᖅᑕᐅᔪ
ᓐᓇᕐᓂᖏ
ᓂᒃ

ᓈᓴᖅ
ᑕᐅᓯᒪ
ᔪᑦ
(CV)

ᓇᓚ

ᐅᑖᑦ
Nmin

ᐊᒥᓲᑎᒋ
ᓂᖏᑦ
ᑲᑎᓪᓗᒋᑦ
ᐱᑕᖅᑕᐅ
ᔪᓐᓇᕐᓂ
ᖏᓂᒃ

ᓈᓴᖅᑕ
ᐅᓯᒪᔪᑦ
(CV)

ᓇᓚᐅᑖ
ᑦNmin

ᐊᒥᓲᑎᒋᓂᖏ
ᑦ ᑲᑎᓪᓗᒋᑦ
ᐱᑕᖅᑕᐅᔪᓐ
ᓇᕐᓂᖏᓂᒃ

ᐃᒫᓗᖕᒥ (Penny
Strait−ᒥ) ᐊᒻᒪᓗ
ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ
(PS-LS−ᒥ); 2009

557 10
(19)

727

(0.07) 685 12

(24) 661

(2.08)

<ᐊᒥᓲ
ᖏᓐᓂᖅ
ᓴᐅᓈᖅ
ᑎᖅᑕᐅ
ᓯᒪᓂᖏ

ᑦ

ᐅᐊᖕᓇᖅᐸᓯᐊᓂᒃ
ᐊᒻᒪᓗ ᕿᑎᖅᐸᓯᐅᓂᒃ
ᓯᑯᓯᓚᐅᑉ N&C FB-ᒥ
2011

6,043 106 8,153

(0.07) 7,687 135 13,452†

(0.43) 9,510 166

Hᐅᐊᑉ
ᐲᖑᓂᕋᖅᑕᐅᔪᒥᒃ
ᑕᓯᐅᔭᖓᓂ ᐃᓚᖓᓂ
ᕼᐊᑦᓴᓐᐲᖑᓂᖓᑕ
ᑕᓯᐅᔭᕐᔪᐅᖑᓂᖓᓂ−
ᕿᑭᖅᑕᓗᐃᑦ
ᐊᑯᑭᑦᑐᐃᓪᓗ
ᐊᑯᓐᓂᖏᓐᓂ ᐃᒪᕐᓂ

1,056 18 1,420

(0.07) 1,339 23 2,102

(0.58) 1,336 23 2,533

(0.17)

2,19

7 38

a ᓈᓴᖅᑕᐅᓯᒪᓂᖏᑦ ᐋᕿᒋᐊᖅᑕᐅᓯᒪᓪᓗᑎᒃ ᐊᒥᓲᓂᖅᐹᕆᔭᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᓇᓗᓇᐃᒃᑯᑕᖃᓚᐅᖅᑐᓂᒃ ᐊᐃᕖᑦ ᑕᐃᒪᖓᑦ ᑎᑎᕋᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᓄᓈᖅᑕᐅᖃᑕᖅᓯᒪᔪᑦ ᐊᑕᐅᑎᒃᑯᑦ ᖃᐅᔨᓴᖅᑕᐅᖃᑦᑕᖅᓯᒪᖕᒥᔪᓂ ᐊᓯᖏᓐᓂᒃ.

b
. ᓈᓴᖅᑕᐅᓯᒪᓂᖏᑦ ᐋᕿᒋᐊᖅᑕᐅᓪᓗᑎᒃ ᐊᑐᖅᑕᐅᓪᓗᑎᒃ ᐊᑐᖅᑕᐅᔪᓐᓇᓚᐅᕐᓂᖏᑦᑦ ᖁᒻᒧᐊᒃᑎᑕᐅᓯᒪᔪᑎᒍᑦ ᖃᐅᔨᒪᔾᔪᑏᑦ ᓄᓈᖅᓯᒪᓂᕋᖅᑕᐅᔪ ᓈᓴᖅᑕᐅᓂᖏᓐᓂ.

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

11

c ᓈᓴᖅᑕᐅᓯᒪᓂᖏᑦ ᐋᕿᒋᐊᖅᑕᐅᓚᐅᖅᑐᑦ ᐊᑐᖅᑕᐅᓪᓗᑎᒃ ᑕᐃᒪᐃᒐᔪᖏᓂᖏᑦ ᖃᖓᒃᑯᑦ ᐅᓪᓗᑯᑦ, ᐅᕝᕙᓗᓐᓃᑦ ᐃᓚᖏᓐᓂᒃ ᖃᐅᔨᓴᕐᕕᐅᓂᖏᓐᓂᒃ, ᑕᐃᒃᑯᐊ ᖁᒻᒧᐊᒃᑎᑕᐅᓯᒪᔪᑎᒍᑦ ᐃᓕᑕᕆᔭᐅᓯᒪᖃᑦᑕᓚᐅᕐᓂᖏᑦ ‘ᓄᓈᖅᓯᒪᓂᕋᖅᑕᐅᓪᓗᑎᒃ’.

d
. ᓈᓴᖅᑕᐅᓯᒪᓂᖏᑦ ᑐᖓᕕᖃᓚᐅᖅᑐᑦ ᓈᓴᖅᑕᐅᒃᑲᓐᓂᖅᑐᕕᓂᐅᓂᖏᓐᓂᒃ ᐋᕿᒋᐊᖅᑕᐅᓯᒪᓗᑎᒃ ᖃᐅᔨᔭᐅᔪᓐᓇᕐᓂᕐᓂᖏᓐᓄᒃ ᐊᒻᒪᓗ ᐱᑕᖃᑎᒋᓂᖏᓐᓂᒃ ᒪᓕᒃᑐᓂᒃ.

† ᑖᒃᑯᐊ ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᔪᑦ ᐃᓱᒪᓇᖅᑐᐃᓐᓇᖅᑐᒥᒃ ᐊᑐᖅᓯᒪᔪᑦ ᑕᐃᒃᑯᐊ ᓇᓗᓇᐃᒃᑯᑕᖅᑐᓂᒃ ᖃᐅᔨᒪᔭᐅᖃᑦᑕᓚᐅᖅᑐᓂᒃ ᐊᑕᐅᓯᕐᒥᒃ ᓄᓇᖅᓯᒪᕝᕕᐅᓂᕐᒥᒃ, ᑭᒡᒐᖅᑐᐃᖃᑕᐅᔾᔪᑕᐅᓚᐅᖅᑐᑦ ᐊᓯᖏᓐᓂᒃ ᓄᓈᖅᓯᒪᕝᕕᐅᕙᖕᒥᔪᓂᒃ ᑕᐅᕙᓂ ᓯᑯᓯᓚᕐᒥ, ᐊᒻᒪᓗ ᑐᖓᕕᖃᖅᓱᑎᒃ ᐊᒥᓲᓂᓕᖕᓂᒃ 4,484 ᑕᒪᓐᓇ ᐃᓱᒪᒋᔭᐅᑐᐃᓐᓇᕐᓂᖓ ᓱᓕᓐᓂᒃᑯᖏᑦ, ᑕᐃᒪᓕ ᐱᐅᓂᖅᐹᒥᒃ ᓇᓚᐅᑖᕈᑎᖃᓕᕋᔭᖅᐳᑦ ᐊᒥᓲᓂᖏᓐᓂᒃ 10,379−ᓂᒃ (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ = 42 ᐳᓴᓐᑎᒦᑦᑐᑦ) ᑕᐃᒃᑯᓄᖓ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ 129−ᓂᒃ.

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

12

ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 2. ᐊᑐᓂ ᐊᐃᕕᖃᕐᕕᐅᓂᖏᓐᓂᒃ ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᓂᖏᑦ ᓈᓴᖅᑕᐅᖃᑦᑕᓚᐅᖅᑐᑦ ᐊᑐᖅᓱᒋᑦᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᐊᒻᒪᓗ ᓄᓈᖅᑕᐅᓯᒪᒐᔪᖕᓂᕆᔭᐅᓚᐅᖅᑐᑦ ᐊᖑᓇᓱᒃᑎᓄᑦ ᐊᐃᕝᕕᖅᑲᑕᐅᓯᒪᔪᓂᒃ ᓄᓇᕗᒻᒥ ᐊᒻᒪᓗ ᓄᓇᕕᖕᒥ, ᐊᕐᕋᒍᐃᑦ ᐊᑯᓐᓂᖏᓐᓂᒃ 1985 ᐊᒻᒪᓗ 2010. (SD = ᐱᐅᓯᕆᔭᐅᒐᔪᒃᑐᖅ ᒪᓕᒐᖅᑎᒍᑦ ᐊᔾᔨᒌᖏᓐᓂᖃᕈᓐᓇᕐᓂᖏᓐᓂᒃ)

ᓇᓂ ᐊᐃᕕᖃᕐᓂᖏ ᐊᒥᓲᑎᒋᓂᖏᑦ
ᑲᑎᓪᓗᒋᑦ
ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏ
ᓂᒃ

ᐊᕐᕋᒍᑕᒫᖅ
ᓄᓈᖅᑕᐅᒐᔪᒃᓯᒪᓂ
ᖏᑦ ± SD
(# ᐊᕋᒍᓂ
ᐊᑐᕋᔪᓚᐅᖅᑐᑦ)

†

ᐅᖃᐅᒃᓯᓴᐃᑦ

ᖁᑦᑎᒃᑐᕐᒥᐅᑦ 27- 31 (52‡

) 14.1 ± 10.1 (22)

ᓴᓐᓂᕈᑎᐅᑉ ᐃᒪᖓᓂ (BB) 10-11 9.0 ± 6.7* (17) * ᑕᒪᕐᒥᒃ ᑕᐃᒃᑯᐊ ᐊᐅᓱᐃᑦᑐᖅᒥᐅᓄᑦ ᐱᔭᐅᓯᒪᔪᑦ ᐱᔭᐅᓯᒪᓐᓂᕈᑎᒃ

ᓴᓂᕈᑎᐅᑉ ᐃᒪᖓᓂᒃ.

ᑕᓪᓗᕈᑎᐅᑉ ᐃᑭᕋᓴᖓᑕ
ᐱᖓᓇᖅᐸᓯᐊᓂ ᐃᒪᕐᓂᒃ
(WJS)

7-8
(17−ᓄᑦ
ᐃᒪᐃᓕᖓᒍᑎᒃ

FR=1.0)

9.0 ± 6.7* (17)

* ᑕᒪᒥᒃ ᐊᐅᓱᐃᑦᑐᕐᒥᐅᓄᑦ ᐊᐃᕕᖅᑕᐅᓂᑯᑦ ᑕᓪᓗᕈᑎᐅᑉ ᐃᑭᕋᓴᖓᑕ

ᐱᖓᓇᖅᐸᓯᐊᓂ ᐃᒪᓂᖔᕈᑎᒃ, ᑭᓯᐊᓂ ᓯᑕᒪᐃᓐᓇᑯᓗᐃᑦ 4
ᑎᑎᕋᖅᑕᐅᓯᒪᖕᒪᖓ.

ᐃᒫᓗᖕᒥ (Penny Strait−ᒥ)
ᐊᒻᒪᓗ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ
(PS-LS−ᒥ);

10-12
(24−ᓄᑦ
ᐃᒪᐃᓕᖓᒍᑎᒃ

FR=1.0)

5.9 ± 4.3* (17) * ᑕᒪᕐᒥᒃ ᐃᒃᐱᐊᕐᔪᖕᒥᐅᑦ, ᒥᑦᑎᒪᑕᓕᖕᒥᐅᑦ ᐊᒻᒪᓗ ᖃᐅᓱᐃᑦᑐᕐᒥᐅᑦ

ᐊᐃᕝᕙᖕᓂᑯᖏᑦ ᐱᔭᐅᓯᒪᔪᑦ ᑕᐅᕙᖓᒃᑦ PS-LS−ᒥᒃ ᐃᒪᕐᓂᒃ.

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

13

ᓇᓂ ᐊᐃᕕᖃᕐᓂᖏ ᐊᒥᓲᑎᒋᓂᖏᑦ
ᑲᑎᓪᓗᒋᑦ
ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏ
ᓂᒃ

ᐊᕐᕋᒍᑕᒫᖅ
ᓄᓈᖅᑕᐅᒐᔪᒃᓯᒪᓂ
ᖏᑦ ± SD
(# ᐊᕋᒍᓂ
ᐊᑐᕋᔪᓚᐅᖅᑐᑦ)

†

ᐅᖃᐅᒃᓯᓴᐃᑦ

ᕿᑎᖅᐸᓯᓂᐊ

ᐅᑭᐅᖅᑕᖅᑑᑉ 366.7 ± 85.5 (18)

ᐅᐊᓐᓇᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ
ᕿᑎᖅᐸᓯᐊᓂᒃ ᓯᑯᓯᓚᕐᒥᐅᓂ
(N&C-FB)

106-135

(166) 184.5 ± 56.1 (22)

ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᐊᒥᓲᑎᒋᔪᓐᓇᒻᒪᕆᒃᑐᑦ 166 ᑐᖓᕕᐅᓂᖏᓐᓄᑦ ᖃᓄᖅ ᑐᑭᓕᐅᕈᑕᐅᓚᐅᖅᑐᑦ ᓇᓗᓇᐃᒃᑯᑕᓕᖕᓂᒃ ᐊᑐᖅᑕᐅᓂᖏᑦ ᑐᑭᓯᔭᐅᓯᒪᖕᒪᖔᑕ.

ᕼᐅᐊᕐᐲᒥ ᑕᓯᐅᔭᐅᓂᕐᒥ
Hoare Bay-ᒥ ᐃᓚᖓᓂ
ᕼᐊᑦᓴᓐ
ᐲᖑᓂᐊᓗᖕᒥᒃ−ᑕᓯᐅᔭᕐᔪᐅᖑ
ᓂᖓᓂ−ᕿᑭᖅᑕᓗᐃᑦ
ᐊᑯᑭᑦᑐᐃᓪᓗ ᐊᑯᓐᓂᖏᓐᓂ
ᐃᒪᕐᓂ (HB-DS-ᒥ),

18-38 35.8 ± 18.9* (21)

* ᑕᒪᕐᒥᒃ ᑲᖏᖅᑐᒑᐱᒻᒥ, ᕿᑭᖅᑕᕐᔪᐊᕐᓂ ᐊᒻᒪᓗ ᐸᓐᓂᖅᑑᖅᒥ ᐃᖃᓗᖕᓂ ᐊᐅᕝᕙᒃᑕᐅᓯᒪᓂᖏᑦ ᐱᔭᐅᓐᓂᕈᑎᒃ ᓂᒋᐊᑕ ᑲᓇᖕᓇᖓᓂ ᕿᑭᖅᑖᓘᑉ (ᑲᖏᑐᒑᐱᒃ, ᕿᑭᖅᑕᕐᔪᐊᖅ ᐊᒻᒪ ᐸᓐᓂᖅᑑᖅ ᐊᐅᕙᒃᓯᒪᖃᑕᓚᐅᕐᒪᑕ ᑕᐃᒪᖓᑦ ᖃᓂᒋᔭᖏᓐᓂᒃ 22-ᓂᒃ)

ᕼᐊᑦᓴᓐ ᐲᖑᓂᐊᓗᖕᒥᒃ
ᑕᓯᐅᔭᕐᔪᐅᖑᓂᖓᓂ−ᕿᑭᖅᑕ
ᓗᐃᑦ ᐊᑯᑭᑦᑐᐃᓪᓗ
ᐊᑯᓐᓂᖏᓐᓂ ᐃᒪᕐᓂ
(HB-DS)

165.7 ± 65.7 (21) ᑕᐃᒃᑯᐊ HB-DS −ᒥ ᐊᐃᕕᖅᑕᖃᕆᐊ−ᖃᕋᔭᖅᑐᑦ 9,500−ᓂᒃ

ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᐊᕈᑎᒃ 166−ᖑᔪᑦ.

† ᑕᐃᒃᑯᐊ ᐊᐃᕙᒃᑕᐅᓯᒪᒐᔪᖕᓂᖏᓐᓄᑦ ᐊᒥᓲᓂᖏᑦ ᐃᓚᖃᖅᐳᑦ ᐊᕐᕋᒎᐃᓐᓇᖏᓐᓂᒃ 75% ᐳᓴᓐᑎᖏᓃᓚᐅᖅᑐᓂᒃ ᖃᔅᓰᓐᓇᐅᓂᖅᐹᖑᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᑕᒪᐃᓐᓂᒃ ᐅᖃᐅᓯᐅᔪᖃᖃᑦᑕᓚᐅᕐᓂᖏᓐᓂᒃ ᐊᐃᕙᒃᓯᒪᓂᕐᒥᓂᒃ.

‡ ᐃᒪᐃᓕᖓᒍᑎᒃ FR=1.0 ᓇᓗᓇᐃᒃᑯᑕᓕᒃ ᐊᒥᓱᕈᖅᓰᐊᖑᓂᖏᓐᓂᒃ ᓇᓗᓇᐃᒃᑯᑕᐅᓂᖅ, ᑕᓪᓗᕈᑎᐅᑉ ᐃᑭᕋᓴᖓᑕ ᐱᖓᓇᖅᐸᓯᐊᓂ ᐃᒪᕐᓂᒃ WJS ᐊᒻᒪᓗ ᐃᒫᓗᖕᒥ (Penny Strait−ᒥ) ᐊᒻᒪᓗ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ PS-LS.

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

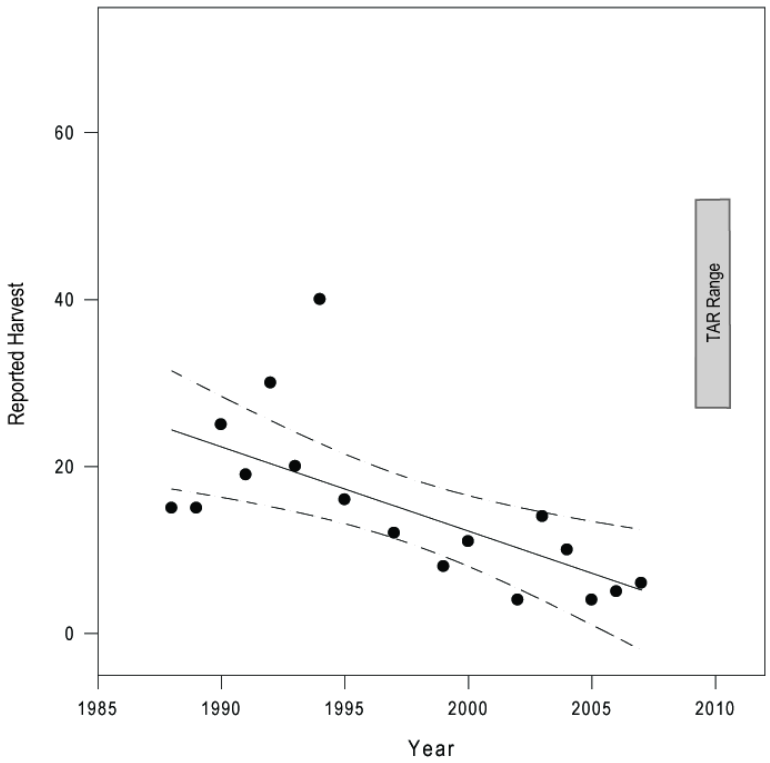
14

ᐃᒫᓗᖕᒥ (Penny Strait−ᒥ) ᐊᒻᒪᓗ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ
2009−ᖑᑎᓪᓗᒍ ᐃᒫᓗᖕᒥ ᐊᒻᒪᓗ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ ᐊᐃᕖᖃᕐᓂᖏᑦ ᓈᓚᐅᑖᖅᑕᐅᓚᐅᖅᑐᑦ ᐊᑯᓐᓂᖏᓐᓃᓐᓂᖅ, 661 (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ = 2.08) ᐊᒻᒪᓗ 727 (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ = 0.07) ᐊᐃᕖᑦ ᓯᕗᓪᓕᕐᒥᒃ ᓈᓴᖅᑕᐅᓚᐅᕐᓂᖏᑦ 557 (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 1). ᖁᒻᒧᐊᒃᑎᑕᐅᓯᒪᔪᑎᒍᑦ ᒪᓕᒍᑏᑦ ᖃᐅᔨᒪᓂᕐᒧᑦ ᐊᐃᕕᕐᓂᒃ ᐊᑐᐃᓐᓇᐅᓚᐅᖅᐳᑦ 2009−ᒥ ᓈᓴᖅᑕᐅᔪᓂᖏᓐᓂᒃ, ᑕᐃᒪᐃᓂᖏᓄᓪᓗ ᐋᕿᒋᐊᖅᑕᐅᓯᒪᔪᖃᓗᐊᓚᐳᖏᑦᑐᖅ. ᐃᒻᒪᖄ ᐊᑐᖅᑕᐅᓗᑎᒃ ᐊᒥᓲᓂᖅᐹᖑᔪᓐᓇᕐᓂᖏᑦ ᓄᓈᖅᓯᒪᓚᐅᖅᑐᑦ ᓈᓴᖅᑕᐅᓂᖏᑦ (0.74) ᐊᒥᓲᓪᓚᕆᖕᓂᖏᑦ ᐊᐃᕖᑦ ᑐᖓᐅᑕᐅᓯᒪᕗᑦ. ᓈᓴᖅᑕᐅᓯᒪᓂᖏᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᐋᖀᐅᒪᔭᐅᓚᐅᖅᑐᑦ 10-12−ᓄᑦ ᐊᐃᕕᕐᓄᑦ (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 2). ᓈᓴᖅᑕᐅᒐᒥᒃ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᐊᑐᕐᓗᒋᑦ ᐋᖀᐅᒪᓂᖏᑦ FR = 1.0, ᐊᒥᓱᕈᕆᐊᕈᑕᐅᓚᐅᖅᐳᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ
24−ᓄᑦ. ᐃᓱᒪᒋᔭᐅᑲᐅᑎᒋᓐᓂᕈᓂ ᑕᒪᕐᒥᒃ ᐊᐃᕕᑦ ᐊᐃᕝᕙᒃᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᓄᓇᓕᖕᒥᐅᑕᓄᑦ ᐃᒃᐱᐊᕐᔪᖕᓂ, ᒥᑦᑎᒪᑕᓕᖕᒥ ᐊᒻᒪᓗ ᖃᐅᓱᐃᑦᑐᖅᒥ ᑕᐃᒃᑯᓂᖓᑦᓴᐃᓐᓈᖅᓯᒪᔪᒍᑎᒃ ᑕᐅᕙᓂ PS-LS−ᖑᓂᕐᒥᒃ ᐊᐃᕕᖁᑎᖏᓐᓂᒃ, ᓄᓈᖅᑕᐅᕙᓚᐅᕐᓂᖏᑦ ᐊᐃᕝᕙᒃᑕᐅᓯᒪᔪᑦ ᐊᕐᕋᒍᐃᑦ ᐊᑯᓐᓂᖏᓐᓂᒃ 1985-2010−ᒥᓗ 6−ᖑᓚᐅᖅᑐᑦ (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 2).

ᐊᒥᓲᓂᖏᓐᓂᒃ ᐲᖅᑕᐅᓯᒪᓂᖏᑦ

ᓇᓚᐅᑦᑎᓯᒪᐊᖅᑐᓂᒃ ᓈᓴᖅᑕᐅᔪᓐᓇᕐᓂᖏᑦ ᐊᖑᓇᓱᒃᑕᐅᓯᒪᑎᒋᓂᖏᓐᓂᒃ ᐱᖓᓱᓂᒃ

ᐊᐃᕕᖃᕐᕕᐅᕙᒃᑐᓂᒃ, ᐊᔪ14ᓇᓚᐅᕋᓗᐊᖅᑎᓪᓗᒋ, ᑕᐃᒃᑯᐊ ᑲᑎᑕᐅᓪᓗᑎᒃ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ (27-52) ᖄᖏᐅᑎᓯᒪᖕᒪᑕ ᐅᖃᐅᓯᐅᒐᔪᐃᓐᓇᖃᑦᑕᓚᐅᖅᑐᓂᒃ ᐊᒥᓲᑎᒋᒐᔪᓚᐅᕐᓂᖏᓐᓂᒃ 14−ᓂᒃ ᐊᐃᕝᕕᒃᑕᐅᕙᓚᐅᕐᓂᖏᓐᓂᒃ ᖁᑦᑎᒃᑐᕐᒥᐅᓄᑦ ᑲᓇᑕᒥ (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 2, ᓈᓴᐅᑎᓕᒃ 2).



ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

15

ᓈᓴᐅᑎᓕᒃ 2. ᐅᖃᐅᓯᐅᓯᒪᓂᖏᑦ ᐊᕐᕋᒍᑕᒫᖅ ᐊᐃᕝᕙᒃᑕᐅᓯᒪᖃᑕᕐᓂᖏᑦ ᖁᑦᑎᒃᑐᕐᒥᐅᑕᐃᑦ ᓄᓇᖏᓐᓄᑦ. ᑕᒪᒃᑯᐊ ᓯᖁᑦᑎᖅᓯᒪᔪᓂᒃ ᑎᑎᕋᖅᑕᐅᓯᒪᔪᑦ ᑐᑭᒧᐊᒃᑐᓂᒃ ᐅᓂᑳᕈᑕᐅᕗᑦ ᖁᓛᒎᕋᔭᖅᑐᓂᒃ ᐊᒻᒪᓗ ᐊᑖᒍᕋᔭᖅᑐᓂᒃ 95% ᐳᓴᓐᑎᒥᒃ ᓇᓗᓇᖏᓐᓂᕋᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ, ᐱᓪᓚᑖᓚᐅᖅᑐᓂᒃ. ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᓂᖏᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᕗᑦ ᑕᑯᒃᓴᐅᖁᓪᓗᒋᑦ ᐊᔾᔨᒋᖏᓐᓂᖃᕐᓂᖏᑦ.

ᕿᑎᖅᐸᓯᐊᓂ ᐅᑭᐅᖅᑕᖅᑑᑉ ᐊᐃᕕᖃᕐᓂᖏᑦ

ᐅᐊᖕᓇᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᕿᑎᖅᐸᓯᐊᓂᒃ ᓯᑯᓯᓚᐅᕐᒥ

ᐊᐃᕖᑦ ᑕᐅᕙᓂ ᐅᐊᖕᓇᖅᐸᓯᐊᓂᒃ ᓯᑯᓯᓚᐅᑉ ᐊᒻᒪᓗ ᕿᑎᖅᐸᓯᐊᓂᒃ ᓯᑯᓯᓚᐅᑉ ᓇᓗᓇᕐᒪᑕ ᐃᓚᒌᖏᑦᑐᓐᓇᕐᓂᖏᑦ ᖃᖓᑕᓲᒃᑰᖅᓱᓂ, ᑕᐃᒪᐃᓐᓂᖏᓄᓪᓗ ᖃᖓᑕᓲᑯᑦ ᓈᓴᖅᑕᐅᓚᐅᕐᓂᖏᑦ ᑲᑎᖓᑎᑕᐅᓚᐅᖅᑐᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᖓᓗᑎᒃ ᐅᖃᐅᓯᐅᓯᒪᓪᓗᑎᒃ ᑕᐃᔭᐅᓗᑎᒃ ᐅᐊᓐᓇᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᕿᑎᖅᐸᓯᐊᓂᒃ ᓯᑯᓯᓚᕐᒥᐅᓂ N&C-FB. ᑖᒃᑯᐊ ᑲᑎᖓᑎᑕᐅᓪᓗᑎᒃ ᓈᓴᖅᑕᐅᒐᒥᒃ ᐊᒥᓲᓂᖃᕋᓱᒋᔭᐅᓚᐅᖅᐳᑦ ᓈᓴᖅᑕᐅᒐᒥᒃ 8,153 (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ) = 0.07) ᐊᐃᕖᑦ 2011−ᒥ, ᑐᖓᕕᐅᓪᓗᑎᒃ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᑦ 6,043 (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 1) (ᓯᑑᕗᒃᑯᑦ ᐱᓕᕆᖃᑎᖏᓄᓪᓗ ᐅᓂᒃᑳᓕᐊᕕᓃᑦ, 2013b), ᑭᓯᐊᓂ ᐃᓱᒪᓯᒪᑐᐃᓐᓇᕐᓂᖅ ᑕᐃᒃᑯᐊ ᐊᒥᓲᓂᖅᐹᕆᔭᐅᓚᐅᖏᓂᖏᓐᓂᒃ ᓄᓈᖅᑕᐅᓚᐅᖅᑐᑦ ᑐᖁᑕᐅᒐᒥᒃ (0.74) ᑐᖓᐅᑦᑎᓯᒪᔪᒃᓴᐅᕗᑦ ᐊᒥᓲᓂᖏᓐᓂᒃ ᐊᐃᕙᒃᑕᐅᓯᒪᔪᓂᒃ ᓄᓈᖅᑕᐅᓚᐅᖅᑐᓂᒃ . ᑕᐃᒃᑯᐊ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᓈᓴᖅᑕᐅᒐᒥᒃ ᓴᕿᑎᑦᑎᓚᐅᖅᑐᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ 106-135−ᓂᒃ ᐊᐃᕕᕐᓂᒃ, ᐊᑖᓃᑦᑐᓂᒃ 25-ᓄᑦ ᐊᕐᕋᒍᓄᑦ ᐱᑕᖅᑕᐅᖃᑦᑕᖅᓯᒪᑎᒋᓂᖏᓐᓂᒃ ᖃᓂᒋᔭᖏᓃᑦᑐᓂᒃ 185 ᐊᐃᕖᑦ (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 2), ᐊᑖᒍᕋᔭᖅᑐᓂᒃ 95% ᐳᓴᓐᑎᒥᒃ ᓇᓗᓇᖏᓐᓂᕋᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᐊᒥᓲᓂᖏᓐᓂᒃ (ᓈᓴᐅᑎᓕᖕᓂ 3). ᑕᐃᒪᓕ ᐃᓱᒪᒋᔭᐅᑐᐃᓐᓇᕈᑎᒃ ᖃᐅᔨᒪᔭᐅᔪᓂᒃ ᑕᐃᒃᑯᐊ 12−ᖑᓚᐅᕐᓂᖏᓐᓂᒃ ᓇᓗᓇᐃᒃᑯᑕᖃᓚᐅᖅᑐᑦ ᒪᓕᒃᑕᐅᓲᖑᔪᓂᒃ ᐊᑕᐅᓯᕐᒦᑦᑐᓂᒃ ᓄᓈᕐᕕᐅᓯᒪᔪᓂᒃ ᐊᐃᕕᕐᓄᑦ ᐃᒪᕐᓃᖏᓐᓂᖏᓐᓂᒃ ᐃᓚᖃᕈᑎᒃ

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

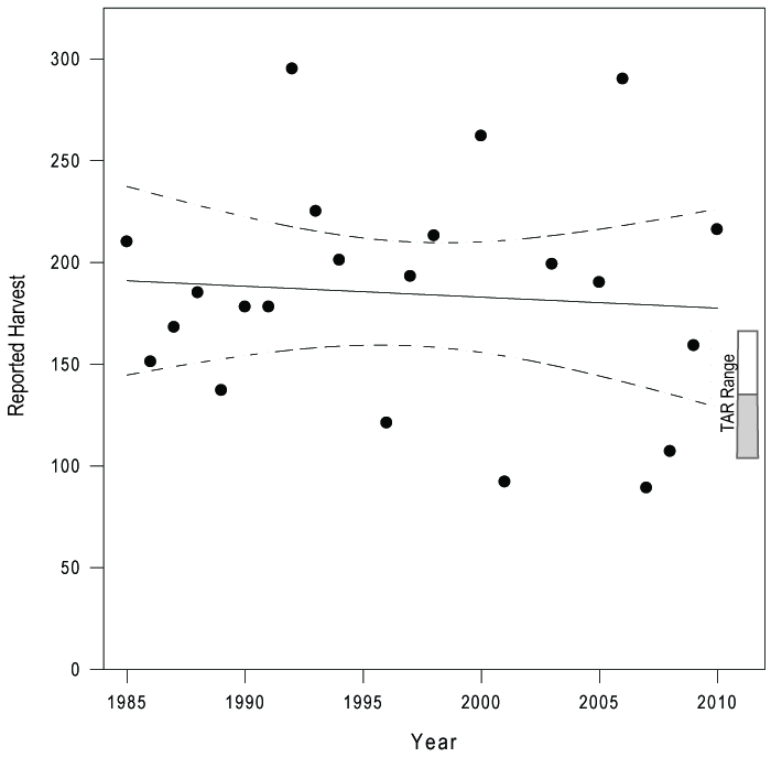
16

ᐊᓯᖏᓐᓂᒃᑕᐅᖅ ᓄᓈᖅᓯᒪᕝᕕᐅᕙᖕᒥᔪᓄᑦ ᐊᐃᕕᕐᓄᑦ ᑕᐅᕙᓂ ᓯᑯᓯᓚᕐᒥ, ᑕᐃᒪᓕ ᐱᑕᖃᖅᑎᒋᔪᕕᓂᐅᑐᐃᓐᓇᕆᖃᕆᕗᑦ 13,452−ᓂᒃ (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ = 0.43) ᐊᐃᕕᖕᓂ ᑕᐅᕙᓂ ᐊᒻᒪᓗ ᑕᐃᒃᑯᐊ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ 166−ᒦᓐᓇᔭᖅᐳᑦ. ᐊᔪᕐᓇᕐᒪᑦ ᐆᑦᑐᕋᐃᔪᓐᓇᕐᓂᖅ ᑕᒪᑐᒥᖓ ᐃᓱᒪᒋᔭᐅᑐᐃᓐᓇᕐᓂᖓᓂᒃ, ᒫᓐᓇᐅᔪᖅ ᑕᑯᓪᓗᒋᑦ ᖃᐅᔨᒪᔾᔪᑎᒋᔭᐅᔪᑦ. ᑕᐃᒃᑯᐊᓗ ᐊᐃᕝᕙᒃᑕᐅᓯᒪᑎᒋᕙᖕᓂᖏᑦ ᑕᐅᕙᓂ ᐅᐊᓐᓇᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᕿᑎᖅᐸᓯᐊᓂᒃ ᓯᑯᓯᓚᕐᒥᐅᓂ N&C-FB

ᐊᒥᓲᓂᖅᓴᐅᓐᓂᕈᑎᒃ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ, ᖃᐅᔨᒪᔭᐅᓕᕋᔭᖅᐸᖅ ᑕᐃᒃᑯᐊ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᑦ ᑐᖓᐅᑦᑎᓯᒪᓂᖏᓐᓂᒃ ᑕᒻᒪᑭᖅᓯᒪᖏᒻᒪᑕ, ᐊᒻᒪᓗ ᐊᒥᓲᖏᓗᐊᖅᑐᓂᒃ ᓈᓴᐃᓗᑕᐅᓇᔭᖅᑐᓂᒃ ᐊᐃᕕᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᑖᒃᑯᓇᖓᑦ. ᑭᓯᐊᓂᓕ ᑕᐃᒪ, ᑕᐃᒃᑯᐊ ᑭᐴᑎᔭᐅᔪᓐᓇᕐᓂᖏᑦ ᑕᐅᕙᓃᑦᑐᑦ ᐅᐊᓐᓇᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᕿᑎᖅᐸᓯᐊᓂᒃ ᓯᑯᓯᓚᕐᒥᐅᓂ N&C-FB ᐊᒻᒪᓗ ᐊᖏᓂᖅᓴᓂ ᐃᒪᕐᑲᕐᕕᐅᓂᖏᓐᓂᒃ ᐱᑕᖃᕐᓂᖏᑦᑕᐅᖅ ᕼᐊᑦᓴᓐ ᐱᒥ ᑕᓯᐅᔭᕐᔪᐊᕐᒥ−ᕿᑭᖅᑕᓘᓪᓗ−ᐊᑯᑭᑦᑐᐃᓪᓗ ᐃᒪᖁᑎᖏᓐᓂ ᖃᐅᔨᓴᖅᑕᐅᑦᑎᐊᒃᑲᓐᓂᕆᐊᖃᕐᓂᐊᖅᐳᑦ.

ᕼᐊᑦᓴᓐ ᐲᖑᓂᕐᒥ−ᕿᑭᖅᑕᓗᐃᑦ ᐊᑯᑭᑦᑐᐃᓪᓗ ᐊᑯᓐᓂᖏᓐᓂ ᐃᒪᕐᓂ

ᐊᒥᓲᓂᖏᑦᑐᑯᓗᐃᑦ ᐃᓚᐃᓐᓇᑯᓗᖏᑦ ᑕᐅᕙᓂ ᕼᐊᑦᓴᓐ ᐲᑉ ᐃᒪᐅᓂᖓᓂᒃ−ᕿᑭᖅᑕᓘᐃᓪᓗ ᐊᑯᑭᑦᑐᐃᓪᓗ ᐊᑯᓂᖏᓐᓂᒃ ᐃᒪᕐᓂᒃᑕᐅᖅ ᓇᓴᖅᑕᐅᓚᐅᕆᕗᑦ. ᑕᐃᒃᑯᐊ ᐊᒥᓲᓂᖏᑦ ᐊᐅᔭᒃᑯᑦ ᑕᒃᐸᓂᓕᖃᑦᑕᖅᑐᑦ ᕼᐅᐊᕐ ᐲᖑᓂᕋᖅᑕᐅᔪᒥ Hoare Bay−ᒥ, ᓂᒋᖅᐸᓯᖓᑕ ᑲᓇᖕᓇᖓᓂ ᕿᑭᖅᑖᓘᑉ, 2007−ᖑᑎᓪᓗᒍ, ᓇᓚᐅᑦᑖᖅᑕᐅᓚᐅᖅᑐᑦ ᐊᒥᓲᓂᖃᕐᓂᖏᓐᓂᒃ 1,420−ᓂᒃ (ᐊᔾᔨᒌᖏᓐᓂᖃᖅᑎᒋᔪᓐᓇᕐᓂᖏᑦ ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ 0.07) ᐊᒻᒪᓗ 2,533−ᖑᔪᓂᒃ (0.17-ᒥᒃ). ᕼᐅᐊᕐ ᐲᒥ ᑕᐅᓯᔭᕐᔪᐊᕐᒥᓐᓂᖏᑦ ᐃᒪᕐᓂ ᐋᕿᒋᐊᖅᑕᐅᓚᐅᖅᑐᑦ ᓈᓴᖅᑕᐅᓂᖏᑦ ᐊᑐᖅᑕᐅᓪᓗᑎᒃ ᓯᑕᒪᐃᑦ 4 ᓇᓗᓇᐃᒃᑯᑕᕆᔭᐅᔪᑦ ᖃᐅᔨᒪᔾᔪᑏᑦ ᐊᑕᓚᐅᖅᑐᑦ ᑕᐅᕙᓃᑦᑐᓄᑦ ᐊᐃᕕᕐᓄᑦ. ᑕᒪᒃᑭᖅᑐᓂᒃ ᐆᒪᔪᐃᑦ ᑐᖁᑕᐅᓯᒪᔪᓐᓇᖅᑎᒋᓂᖏᓐᓂᒃ ᓈᓴᖅᑕᐅᓚᐅᖅᑐᑦ Hoare Bay−ᒥ ᕼᐅᐊᕐ ᐲᖑᓂᕐᒥᒃ ᓴᕿᑎᑦᑎᓚᐅᖅᐳᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᓴᕿᑎᑦᑎᓚᐅᖅᑐᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᑦ ᐊᑯᓐᓂᖏᓐᓂᒃ 18 ᐊᒻᒪᓗ 38−ᓂᒃ ᐊᐃᕕᕐᓂᒃ (ᑕᑯᑎᑦᑎᔾᔪᑎᓃᑦᑐᑦ 2-ᒥ). ᐃᓱᒪᒋᔭᐅᑐᐃᓐᓇᕈᑎᒃ ᑕᒪᕐᒥᒃ ᐊᐃᕝᕙᒃᑕᐅᓯᒪᓂᖏᑦ ᓄᓇᓕᖕᓂ ᑲᖏᖅᑐᒑᐱᒃ, ᕿᑭᖅᑕᕐᔪᐊᖅ ᐊᒻᒪᓗ ᐸᓐᓂᖅᑑᖅ ᑕᐅᕙᓂ ᓂᒋᖅᐸᓯᐊᓃᒃ ᕿᑭᖅᑖᓘᖕᒥᒃ, ᓄᓈᖅᑕᐅᖃᑦᑕᓚᐅᖅᑐᑦ ᑐᖁᑕᐅᓪᓗᑐᒃ 1985-2010-ᒥ, 22-ᖑᓚᐅᖅᑐᑦ (ᑕᑯᑎᑦᑎᔾᔪᑎᓂᒃ ᓇᓴᐅᑎᓕᖕᓂᒃ 2-ᒥ). ᐃᖃᓗᖕᒥᐅᑦ ᐃᓚᔭᐅᒍᑎᒃ, ᐱᑕᖅᑕᐅᒐᔪᖕᓂᖏᑦ ᐊᐃᕖᑦ ᖃᓂᒋᔭᓃᓕᖅᐳᑦ 36 (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 2-ᒥᒃ) .



ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

17

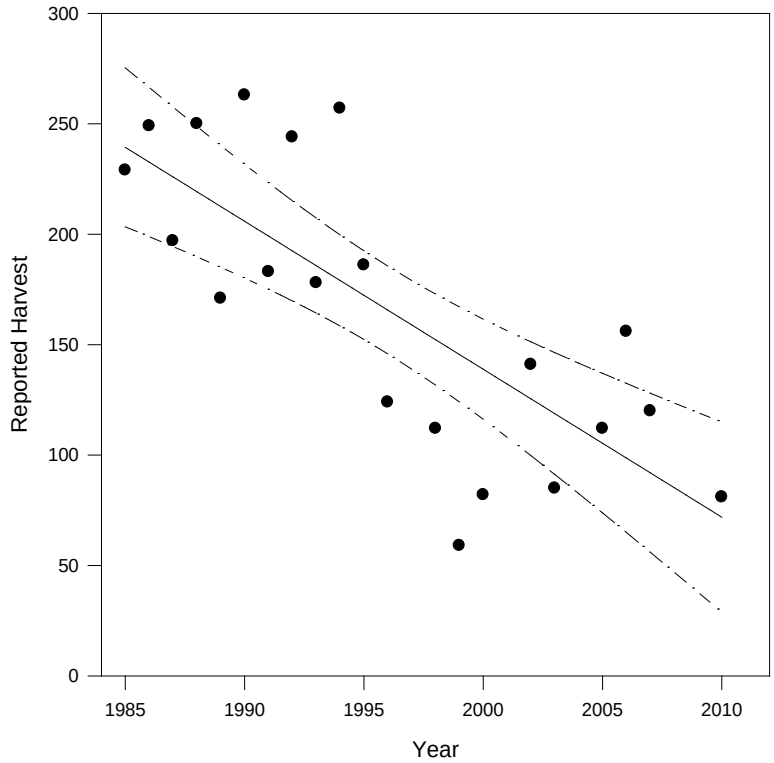
ᓈᓴᐅᑎᓕᒃ 3. ᐅᖃᐅᓯᐅᓯᒪᓂᖏᑦ ᐊᕐᕋᒍᑕᒫᖅ ᐊᐃᕝᕙᒃᑕᐅᓯᒪᖃᑕᕐᓂᖏᑦ ᓯᑯᓯᓚᒥᐅᓂᒃ ᓄᓇᖏᓐᓄᑦ. ᑕᒪᒃᑯᐊ ᓯᖁᑦᑎᖅᓯᒪᔪᓂᒃ ᑎᑎᕋᖅᑕᐅᓯᒪᔪᑦ ᑐᑭᒧᐊᒃᑐᓂᒃ ᐅᓂᑳᕈᑕᐅᕗᑦ ᖁᓛᒎᕋᔭᖅᑐᓂᒃ ᐊᒻᒪᓗ ᐊᑖᒍᕋᔭᖅᑐᓂᒃ 95% ᐳᓴᓐᑎᒥᒃ ᓇᓗᓇᖏᓐᓂᕋᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ, ᐱᓪᓚᑖᓚᐅᖅᑐᓂᒃ. ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᓂᖏᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᕗᑦ ᑕᑯᒃᓴᐅᖁᓪᓗᒋᑦ ᐊᔾᔨᒋᖏᓐᓂᖃᕐᓂᖏᑦ. ᑖᒃᑯᐊ ᓯᐊᕐᓇᐅᓂᖏᑦ ᕿᔪᖁᑎᖑᐊᑦ ᑐᖓᕕᖃᖅᐳᑦ ᓈᓴᖅᑕᐅᓂᑰᓂᖏᓐᓂᒃ 2010 ᐊᒻᒪᓗ 2011−ᒥ. ᑕᐃᒃᑯᐊ ᑕᖅᓴᖃᖏᑦᑐᑦ ᕿᔪᖁᑎᖑᐊᑦ ᓇᓗᓇᐃᔭᐃᕗᑦ ᐅᖓᑖᓃᓐᓂᖏᓐᓂᒃ ᐆᒪᔪᖃᕐᓂᒃ ᓇᓗᓇᐃᒃᑯᑕᓕᔭᖅᑐᖃᓚᐅᖅᐳᑦ ᑭᒡᒐᖅᑐᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ.

ᐊᕐᕋᒍᑕᒫᖅ ᐅᖃᐅᓯᐅᓯᒪᓂᖏᑦ ᐊᐃᕝᕙᒃᑕᐅᓯᒪᓂᖏᑦ ᑕᐅᕙᖓᑦ HB-DS−ᖑᓂᕐᒥᒃ ᐊᐃᕕᕐᓂᒃ, 166−ᖑᓚᐅᖅᑐᑦ. (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 2) ᓈᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂ ᐊᒥᓲᖏᓐᓂᖅᓴᕈᖅᓯᒪᓪᓗᑎᒃ ᐊᖏᔪᒥᒃ ᑕᐃᒪᖓᑦ ᐊᑐᕐᓂᖏᓐᓂᒃ 25 ᐊᕐᕋᒎᐃᑦ (ᓇᓴᐅᑎᓕᒃ 4). ᐃᓱᒪᒋᔭᐅᖁᔭᐅᓯᒪᔪᖅ ᑕᐃᒃᑯᐊ ᐃᓚᖃᕐᓂᖏᓐᓂᒃ ᐊᓯᖏᓐᓄᒃ ᐅᕝᕙᓗᓐᓃᑦ ᐊᔾᔨᐅᖏᓐᓂᖃᕐᓂᖏᓐᓂᒃ ᐃᓗᐊᓃᑦᑐᑦ HB-DS−ᒥ

ᐊᐃᕕᖃᕐᕕᐅᓂᖏᓐᓂᒃ, ᑭᓯᐊᓂ ᒫᓐᓇᐅᔪᖅ ᐊᐃᕝᕙᒃᑕᐅᕙᖕᓂᖏᓐᓂᒃ ᑎᒃᑯᐊᖅᑕᐅᓯᒪᔪᓐᓇᖏᒻᒪᑕ ᑕᐃᒃᑯᐊ ᑐᑭᓕᐅᖅᑕᐅᓯᒪᖏᓐᓂᖏᓐᓂᒃ ᓇᓪᓕᐊᖑᖕᒪᖔᑕ. ᐊᒥᓲᓂᖃᕆᐊᖃᕐᕋᔭᕐᒪᑕ 9,500−ᓂᒃ ᐊᐃᕕᕐᓂᒃ ᒫᓐᓇᐅᔪᖅ ᑕᐃᒫᑎᒋ ᐊᐃᕝᕙᒡᕕᐅᔪᓐᓇᖃᑦᑕᕐᓂᐊᕈᑎᒃ ᑕᐅᕙᓂ ᕼᐊᑦᓴᓐ ᐱᒥᒃ ᐃᒪᖁᑎᖏᓐᓂᒃ−ᕿᑭᖅᑖᓘᓪᓗ ᐊᑯᑭᑦᑐᐃᓪᓗ ᐊᑯᓐᓂᖏᓐᓂᒃ ᐃᒪᕐᓂ. ᑕᒪᓐᓇ ᐃᓱᒪᓇᕈᓐᓇᖏᑦᑐᖅ ᐊᒥᓱᐊᓘᓂᖏᓐᓄᑦ ᐊᐃᕖᑦ, ᑭᓯᐊᓂᓕ ᑕᒪᕐᒥᒃ ᐊᐃᕖᑦ ᐱᑕᖃᕈᓐᓇᕋᔭᖏᓚᑦ ᓄᓇᓕᖕᓂ ᑕᐃᒫᑎᒋ ᐱᑕᕐᕕᐅᖃᑦᑕᕐᓂᐊᕈᑎᒃ. ᖃᐅᔨᒪᔭᐅᑦᑎᐊᒃᑲᓐᓂᕆᐊᖃᖅᐳᑦ ᑕᒪᐃᓐᓂᒃ ᐱᑕᖃᖅᑎᒋᓂᖏᓐᓂᒃ ᐊᐃᕖᑦ ᐊᒻᒪᓗ ᐊᒥᓲᑎᒋᓂᖏᓐᓂᒃ ᐊᑐᓂ.

ᐊᒥᓲᓂᖏᓐᓂᒃ ᐲᖅᑕᐅᓯᒪᓂᖏᑦ

ᓈᓴᖅᑕᐅᓂᖏᓐᓂᒃ ᕿᑎᖅᐸᓯᐊᓃᓐᓂᖏᑦ ᐊᐃᕖᑦ ᑕᒪᕐᒥᒃ ᐱᔭᕇᖅᑕᐅᓯᒪᖏᑦᑐᑦ, ᐊᒻᒪᓗ ᓴᕿᐅᒪᔪᖃᓕᓚᐅᖅᐳᖅ ᓅᖃᑦᑕᕐᓂᖏᓐᓂᒃ ᐃᒪᕐᓂᒃ ᑲᓇᑕᒥ ᐊᒻᒪᓗ ᐊᑯᑭᑦᑐᕐᒥᐅᑕᓂᒃ. ᑕᐃᒪᐃᓂᖏᓐᓄᑦ, ᐊᑐᐃᓐᓇᐅᔪᑦ ᖃᐅᔨᒪᔾᔪᑏᑦ ᐊᒥᓲᑎᒋᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᐃᓱᒪᒋᔭᐅᓯᒪᔪᑦ ᑐᖓᐅᑦᑎᓯᒪᓂᖅ ᑕᒪᐃᓐᓂᒃ ᐱᑕᖃᕐᓂᖏᓐᓂᒃ. ᓈᒻᒪᖏᓗᐊᕐᒪᑕ ᖃᐅᔨᒪᔾᔪᑏᑦ ᒫᓐᓇᐅᔪᖅ ᐊᑐᖅᑕᐅᔪᓐᓇᖅᑐᑦ



ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

18

ᐱᐅᓯᒋᐊᕈᑕᐅᔪᓐᓇᕐᓂᕐᒧᑦ ᓱᓕᔫᓂᖏᓐᓂᒃ ᐊᒥᓲᓂᖏᑦ ᐅᕝᕙᓗᓐᓃᑦ ᓇᓚᐅᑦᑖᕈᑕᐅᔪᓐᓇᕐᓂᕐᒧᑦ ᑕᐃᒃᑯᓇᖓᑦ ᐊᒥᓲᑎᒋᓂᖏᓂᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ . ᐱᑕᖅᑕᐅᒐᔪᖕᓂᖃᖅᐸᓚᐅᖅᑐᑦ ᑲᓇᑕᒥᐅᑕᓂᒃ ᕿᑎᖅᐸᓯᐊᓂᒃ ᐅᑭᐅᖅᑕᖅᑐᑉ, 367−ᖏᓃᓚᐅᖅᑐᑦ ᐊᐃᕖᑦ (ᓈᓴᐅᑎᓕᖕᓂᒃ ᑕᑯᑎᑦᑎᔾᔪᑦ 2).

Year

1985 1990 1995 2000 2005 2010

Reported Harvest

0

50

100

150

200

250

300

ᓈᓴᐅᑎᓕᒃ 4. ᐅᖃᐅᓯᐅᓯᒪᓂᖏᑦ ᐊᕐᕋᒍᑕᒫᖅ ᐊᐃᕝᕙᒃᑕᐅᓯᒪᖃᑕᕐᓂᖏᑦ ᕼᐊᑉᓴᓐ ᐲᑉ ᑕᓯᐅᔭᕐᔪᐊᖑᓂᐅᔪᑉ−ᕿᑭᖅᑖᓗ ᐊᑯᑭᑦᑐᕐᒥᐅᓪᓗ ᐊᑯᓂᖏᓐᓂᒃ ᐃᒪᖃᕐᕕᐅᔪᓂᒃ ᓄᓇᓕᓐᓄᑦ. ᑕᒪᒃᑯᐊ ᓯᖁᑦᑎᖅᓯᒪᔪᓂᒃ ᑎᑎᕋᖅᑕᐅᓯᒪᔪᑦ ᑐᑭᒧᐊᒃᑐᓂᒃ

ᐅᓂᑳᕈᑕᐅᕗᑦ ᖁᓛᒎᕋᔭᖅᑐᓂᒃ ᐊᒻᒪᓗ ᐊᑖᒍᕋᔭᖅᑐᓂᒃ 95% ᐳᓴᓐᑎᒥᒃ ᓇᓗᓇᖏᓐᓂᕋᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ, ᐱᓪᓚᑖᓚᐅᖅᑐᓂᒃ.

ᓇᓗᓇᕐᓂᖏᑦ ᓇᑭᖔᕐᓂᖏᑦ

ᐊᐃᕖᑦ ᓇᓂᑐᐃᓐᓈᖃᑕᕐᒪᑕ, ᐊᒥᓲᓂᖏᑦ ᓄᓈᖅᓯᒪᕝᕕᐅᖏᓐᓇᖃᑕᕐᓂᖏᑦ ᓇᓗᓇᖅᓱᑎᒃ ᐊᒻᒪᓗ ᓇᓪᓕᖏᑦ ᐊᐃᕖᑦ ᓄᓇᕐᕕᖃᐃᓐᓇᓲᖑᓂᖏᑦ ᓇᓗᓇᕆᓪᓗᑎᒃ. ᑕᒪᒃᑯᐊ ᐱᔾᔪᑕᐅᓂᖏᓐᓄᑦ, ᑐᑭᓕᐅᑐᐃᓐᓇᕋᔭᖅᐳ18 ᑕᐃᒪᓕ ᐃᓱᒪᖃᕐᓂᖅ ᑕᐃᒃᑯᐊ ᖃᖓᑕᓲᒃᑯᑦ ᓈᓴᖅᑕᐅᓚᐅᕐᓂᖏᑦ ᐃᓚᒃᑰᓗᐊᕐᓂᖏᓐᓂᒃ. ᑕᒪᒃᑭᕆᐊᖅᑐᓂᒃ ᖃᖓᑕᓲᒃᑯᑦ ᓈᓴᐃᔪᓐᓇᖃᑦᑕᕐᓂᖅᑕᐅᖅ ᐊᒃᑐᖅᑕᐅᓯᒪᔪᓐᓇᕐᒥᖕᒪᑕ ᐊᒥᓱᓄᑦ ᐊᕐᕋᒍᑕᒫᖅ ᖃᓄᐃᓂᖓᓄᑦ ᓯᓚᐅᑉ, ᓯᑯᐃᑦ, ᐊᒻᒪᓗ ᐊᐃᕕᑦ ᓇᓃᓕᕐᓂᖏᓐᓂᒃ. ᐱᒡᕕᓴᒃᑕᐅᓯᒪᖃᑦᑕᕐᓂᖏᑦ ᐅᒥᐊᖅᑐᖅᑐᓄᑦ ᐃᓚᖏᓐᓂᒃ ᓄᓇᖅᓯᒪᕝᕕᐅᕙᖕᒥᔪᓂᒃ

ᓈᓴᖅᑕᐅᔭᖅᑐᖅᓯᒪᔫᒐᓗᐊᓄᑦ ᐱᔾᔪᑕᐅᖃᑕᕐᒪᑕ ᐊᐃᕕᕐᓄᑦ ᕿᒫᔭᕈᑕᐅᓂᖅ, ᑕᒪᒃᑭᕐᓇᕈᓐᓃᖃᑦᑕᖅᓱᑎᒃ ᖃᐅᔨᔭᐅᔪᒪᔪᓂᒃ ᐊᒥᓲᑎᒋᓂᖏᓐᓂᒃ, ᑕᐃᒃᑯᐊ ᕿᒫᔭᖅᓯᒪᓂᖏᑦ ᐊᓯᖏᓐᓄᐊᕈᓐᓇᖅᓯᓯᒪᓱᖑᓂᖏᓐᓄᑦ ᓄᓇᕐᕕᐅᓯᒪᕙᒃᑐᓂ ᓇᓴᖅᑕᐅᓇᓱᖕᓂᖏᑕ ᐊᑯᓐᓂᖏᓐᓂᒃ. ᒫᓐᓇᐅᔪᖅ ᓇᓚᐅᑦᑖᖅᑕᐅᓂᖏᑦ ᑕᒪᐃᓐᓂᒃ ᐱᑕᖃᖅᑎᒋᓂᖏᓐᓂᒃ ᐃᓗᐊᓂ ᕼᐊᓴᓐ ᐱᒥ ᐊᒻᒪᓗ ᕿᑭᖅᑖᓘᑉ−ᐊᑯᑭᑦᑐᕐᒥᐅᓪᓗ ᐊᑯᓐᓂᖏᓐᓂᒃ ᐃᒪᕐᓂ HB-DS−ᒥ ᐊᐃᕕᑦ ᖃᐅᔨᒪᔭᐅᑦᑎᐊᖏᓚᑦ ᐊᒻᒪᓗ ᖃᐅᔨᒪᔭᐅᑦᑎᐊᖏᑦᑐᒻᒪᕆᐅᒋᓪᓗᑎᒃ ᐊᐃᕖᑦ

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

19

ᐊᐅᓚᕙᖕᓂᖏᑦ ᑕᐅᕙᓂ ᓯᑯᓯᓚᖅᐸᓯᐅᓂᕐᒥ ᐊᒻᒪᓗ ᓯᑯᓯᓚᐅᓂᕐᒥᒃ ᐊᒻᒪᓗ ᕼᐊᓴᓐ ᐱᒥ ᐊᒻᒪᓗ ᕿᑭᖅᑖᓘᑉ−ᐊᑯᑭᑦᑐᕐᒥᐅᓪᓗ ᐊᑯᓐᓂᖏᓐᓂᒃ ᐃᒪᕐᓂ HB-DS−ᒥ ᐃᒪᐅᓂᖏᓐᓂᒃ .

ᖃᐅᔨᒪᔭᐅᓂᖏᑦ ᖁᒻᒧᐊᒃᑎᑕᐅᓯᒪᔪᓂᒃ ᓇᓗᓇᐃᒃᑯᑦᑎᖅᑕᐅᓯᒪᓂᖏᑦ ᐊᔾᔨᐅᓕᐅᖅᑕᐅᔪᓐᓇᕐᓂᖏᓐᓄᑦ ᖃᐅᔨᓴᖅᑕᐅᓯᒪᔪᑦ ᐊᑐᑎᖅᑕᐅᖃᑕᖅᑐᑦ ᐋᕿᒋᐊᖅᑕᐅᓂᖏᓐᓄᑦ ᓄᓇᒦᓐᓂᖏᓐᓂᒃ ᐊᖅᑲᐅᓚᐅᖅᑐᑦ ᐃᒪᕐᒦᓚᐅᖅᑐᓪᓗᓐᓃᑦ ᐊᐃᕖᑦ, ᓈᓴᖅᑕᐅᓯᒪᖃᑕᐅᓚᐅᖏᑦᑐᑦ. ᐊᒥᓱᑦ ᐊᒥᓲᓂᖏᓐᓂᒃ ᓇᓚᐅᒃᑖᕈᑏᑦ ᐅᖃᐅᓯᐅᓯᒪᔪᑦ ᐅᓂᒃᑳᖅᑕᐅᖃᑕᖅᓯᒪᓪᓗᑎᒃ ᑐᖓᕕᖃᖃᑦᑕᖅᓯᒪᔪᑦ ᓇᓚᐅᑖᕈᑎᓂᒃ ᑕᒻᒪᓯᒪᓇᓱᒋᔭᐅᓂᖏᓐᓂᒃ ᑐᖓᐅᑕᐅᓯᒪᓚᐅᖅᑐᓂᒃ ᓈᓴᖅᑕᐅᓂᖏᓐᓂᒃ ᓯᕗᓂᐊᒍᑦ

ᖃᐅᔨᓴᖅᑕᐅᓂᑰᕙᓚᐅᖅᑐᓂᒃ, ᐱᔾᔪᑕᐅᓂᖏᓐᓄᑦ ᐊᔪᕐᓇᖃᑕᕐᓂᖏᑦ ᓵᓇᖅᑕᐅᔪᓐᓇᐃᓐᓇᐅᔪᓐᓇᕐᓂᖏᑦ ᐊᐃᕖᑦ ᓈᓴᖅᑕᐅᓯᔭᖅᑐᖅᓯᒪᓂᖏᓐᓂᒃ. ᑕᐃᒃᑯᐊᓗᓐᓃᑦ ᐊᑕᐅᑎᒃᑰᖅᑕᐅᓪᓗᑎᒃ ᐅᖓᓯᒃᑐᒥᒃ ᖃᐅᔨᒪᔾᔪᑎᒃᓴᓂᒃ ᐊᑐᖅᕋᓗᐊᖅᑎᓪᓗᒋᑦ, ᐊᐅᓚᕙᖕᓂᖏᑦ ᐊᑐᓂ ᐃᓅᑑᓗᑎᒃ ᑭᒡᒐᖅᑐᐃᓂᖃᖅᑎᑕᐅᔪᓐᓇᖏᒻᒪᑕ ᑕᒪᐃᓐᓂᒃ ᑲᑎᖓᔪᓂᒃ ᐊᐃᕕᕐᓂᒃ. ᐱᐅᓯᕆᔭᐅᔪᑦ ᑕᐃᒃᑯᓇᓂ ᓇᓗᓇᐃᒃᑯᑦᑎᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᐊᐃᕖᑦ ᐊᒃᑐᖅᑕᐅᓯᒪᔪᓐᓇᖅᐳᑦ ᖃᖓᒃᑯᑦ ᖃᐅᔨᓴᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᐃᓕᓯᕝᕕᐅᓯᒪᔪᑦ ᓇᓗᓇᐃᒃᑯᑕᕐᓂᒃ ᐊᒻᒪᓗ ᓈᒻᒪᓈᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᑕᒪᐃᓐᓄᑦ ᓄᓈᖅᓯᒪᓂᖏᓐᓂᒃ ᐊᑐᕐᓂᖏᓐᓂᒃ ᖃᐅᔨᓴᖅᑕᐅᓂᖏᓐᓂᒃ. ᑕᐃᒃᑯᐊ ᑭᓯᐊᓂ ᓇᓚᐅᑦᑖᕈᑕᐅᓂᖏᑦ ᑕᐅᕙᓂ ᓯᑯᓯᓚᕐᒥ ᑐᖓᕕᖃᖅᓯᒪᔪᑦ ᖁᓕᓂᒃ 10−ᓂᒃ ᓇᓗᓇᐃᒃᑯᑦᑎᖅᑕᐅᓯᒪᔪᓂᒃ ᐊᒥᓲᓃᓕᖕᓂᒃ ᑕᐅᕙᓂ ᑕᐃᔅᓱᒪᓂ ᓈᓴᖅᑕᐅᒌᕋᒥᒃ.

ᖃᐅᔨᒪᔾᔪᑏᑦ ᐃᓄᐃᑦ ᐱᔾᔪᑕᐅᓂᖏᓐᓄᑦ ᐊᐃᕖᑦ ᑐᖁᔾᔪᑎᒋᕙᒃᑕᖏᑦ ᐊᒥᒐᕐᒥᔪᑦ, ᐱᑕᖃᖏᑦᑐᓪᓗᓐᓃᑦ. ᐅᖃᐅᓯᐅᖃᑦᑕᖅᓯᒪᓂᖏᑦ ᐊᐃᕕᖅᑕᐅᓯᒪᑎᒋᓂᖏᑦ ᑐᖓᐅᑦᑎᓯᒪᖕᒪᑕ ᐊᒥᓲᓂᖏᓐᓂᒃ ᑐᖁᑕᐅᓯᒪᔪᓂᒃ ᑕᒪᐃᓐᓂᒃ, ᐃᓚᖓᒍᑦ ᐃᓚᖃᓲᖑᖏᓐᓂᖏᓐᓄᑦ ᐅᓂᒃᑳᖅᑕᐅᓂᖏᓐᓂᒃ ᐱᑕᖅᑕᐅᓯᒪᔪᓂᒃ−ᔭᒐᐃᔭᐅᓯᒪᔪᓂᓪᓗ (ᐊᓐᓇᔭᐅᓯᒪᑐᐃᓐᓇᖅᑐᓂᒃ). ᒫᓐᓇᐅᔪᖅ ᐊᖑᓇᓱᖕᓂᕐᒥᒃ ᔭᒐᐃᔭᐅᕙᖕᓂᖏᑦ ᐊᒥᓲᓂᖏᑦ ᐊᔾᔨᒌᖃᑦᑕᖏᒻᒪᑕ ᓄᓇᓂ ᓇᓃᓐᓂᖏᓐᓂᒃ (ᐃᓄᐃᑦ), ᖃᖓᐅᓂᖓᓂᒃ ᐊᒻᒪᓗ ᐊᖑᓇᓱᒍᓯᕆᔭᐅᕙᖕᓂᖏᑦ ᑲᓇᑕᒥᐅᑕᓂᒃ ᐊᑐᐃᓐᓇᐅᖏᔅᓱᑎᒃ. ᑕᐃᒃᑯᐊ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᓂ BB−ᒥ ᐊᒻᒪᓗ ᕼᐊᓴᓐ ᐱᒥ ᐊᒻᒪᓗ ᕿᑭᖅᑖᓘᑉ−ᐊᑯᑭᑦᑐᕐᒥᐅᓪᓗ ᐊᑯᓐᓂᖏᓐᓂᒃ ᐃᒪᕐᓂ HB-DS−ᒥ ᐊᖑᓇᓱᒃᑕᐅᖃᑕᕐᒥᖕᒪᑕ ᑕᒪᐃᓐᓂ ᑲᓇᑕᒥᓗ ᐊᑯᑭᑦᑐᕐᒥᐅᓂᓗ, ᑭᓯᐊᓂ ᒫᓐᓇᐅᔪᖅ ᐱᑕᖅᑕᐅᕙᖕᓂᖏᑦ ᐊᑯᑭᑦᑐᕐᒥᐅᑕᓄᑦ ᐃᓱᒪᒃᓴᖅᓯᐅᕈᑕᐅᓯᒪᑦᑐᑦ ᑖᒃᑯᓇᓂ ᐅᓂᒃᑳᓕᐊᓂᒃ. ᐃᓚᒌᖕᒪᖔᑕ ᐊᖑᓇᓱᒡᕕᐅᕙᖕᓂᖏᑦ ᑲᓇᑕᒥᐅᓄᑦ ᐊᑯᑭᑦᑐᕐᒥᐅᓄᓪᓗ ᓇᓗᓇᖅᑐᖅ. ᐊᓯᖏᑦ ᐃᓄᐃᑦ ᐱᔾᔪᑕᐅᓂᖏᓐᓄᑦ ᑐᖁᖃᑦᑕᕐᓂᖏᑦ (ᐅᒥᐊᕐᔪᐊᕐᓄᑦ ᑐᓗᖅᑕᐅᖃᑕᕐᓂᖅ, ᓄᓗᐊᓂᒃ ᓂᒋᕕᖃᑦᑕᕐᓂᖏᓐᓂᒃ) ᓈᓴᖅᑕᐅᓯᒪᖏᒥᔪᑦ.

ᒫᓐᓇᐅᔪᖅ ᖃᐅᔨᒪᔭᐅᖏᒻᒥᔪᑦ ᓂᒋᖅᐸᓯᐊᓃᑦᑐᑦ ᐊᒻᒪᓗ ᑲᓇᖕᓇᖅᐸᓯᐊᓂᒃ ᕼᐊᑦᓴᓐ ᐲᑉ S&E-HB−ᒥ ᐊᐃᕖᑦ ᐱᑕᖃᖅᑎᒋᓂᖏᓐᓄᒃ ᓇᓚᐅᑦᑖᕈᑎᑦ ᐅᕝᕙᓗᓐᓃᑦ ᑐᑭᓯᐅᒪᔭᐅᓂᖏᓐᓂᒃ ᐃᓚᖃᕐᒪᖔᑕ ᐊᓯᖏᓐᓂᒃ ᐊᐃᕕᖃᕐᕕᐅᕙᒃᑐᓂᒃ ᐊᓯᖏᓐᓂᒃ.

ᐃᓱᐊᓂᑐᑭᓯᔭᐅᓯᒪᓂᖏᑦᐊᒻᒪᓗ ᐅᖃᐅᔾᔨᒋᐊᕈᑎᖏᑦ

ᒫᓐᓇᑲᐅᑎᒋ ᐃᓱᒪᓘᑕᐅᓗᐊᖏᑲᓚᐅᖅᐳᑦ ᐊᒥᐊᑯᖃᑦᑕᕆᐊᕈᓐᓇᕐᓂᖏᑦ ᖁᑦᑎᒃᑐᕐᒥᐅᑕᓂ ᐊᐃᕖᑦ ᐱᑕᖃᕐᓂᖏᑦ, ᑭᓯᐊᓂ ᐃᓚᖏᑦ ᑖᒃᑯᓄᖓ ᐃᓚᒋᔭᐅᕙᒃᑐᑦ ᖃᐅᔨᒪᔭᐅᕗᑦ ᐱᑕᖅᑕᐅᖃᑕᕐᓂᖏᓐᓂᒃ ᐊᑯᑭᑦᑐᕐᒥᐅᓄᑦ. ᑐᑭᓯᐅᒪᔭᑦᑎᐊᒃᑲᓐᓂᕆᐊᖃᕐᓂᐊᖅᐳᑦ ᐊᐃᕖᑦ ᓇᒧᖓᐅᕙᖕᓂᖏᑦ ᓇᓃᐸᓕᕐᓂᖏᓪᓗ ᐊᒻᒪ ᑲᑎᓪᓗᒋᑦ ᐊᖑᓇᓱᒃᑕᐅᓯᒪᓪᓗᑎᒃ ᐱᑕᖅᑕᐅᓯᒪᖃᑦᑕᖅᑎᒋᓂᖏᑦ, ᑐᑭᓕᐅᖅᑕᐅᔪᓐᓇᕐᓂᐊᕈᑎᒃ ᐊᒥᐊᑯᖃᑦᑎᐊᕈᓐᓇᖅᑐᓂᒃ ᐊᖑᓇᓱᒃᑕᐅᑎᒋᔪᓐᓇᕋᔭᕐᓂᖏᓐᓂᒃ ᑕᒻᒥᒃᑭᖅᑐᓂᒃ ᓄᓇᓕᐊᓘᖕᓂᒃ.

ᕿᑎᖅᐸᓯᐊᓃᑦᑐᑦ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐊᐃᕖᑦ ᑕᒪᒃᑭᖅᑕᐅᓪᓗᑎᒃ ᖃᐅᔨᒪᔭᐅᕌᓂᖏᓗᐊᕐᒪᑕ, ᑐᑭᓕᐅᑦᑎᐊᕋᔭᖅᑐᓂᒃ ᐊᒥᓲᓂᖏᓐᓂᒃ ᓇᓚᐅᑦᑖᑦᑎᐊᕈᓐᓇᕐᓂᖅ ᐊᒻᒪᓗ ᑕᐃᒃᑯᐊ ᒪᓕᒡᓗᒋᑦ

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

20

ᐋᕿᒃᑕᐅᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ. ᐊᒻᒪᑕᐅᖅ ᓱᓕ, ᑖᒃᑯᐊ ᐊᐃᕙᖕᓂᐊᕐᕕᐅᕙᖕᓂᖏᓐᓄᑦ ᐊᑯᑭᑦᑐᕐᒥᐅᑕᐅᓄᑦ, ᐊᒻᒪᓗ ᖃᐅᔨᓴᖅᑕᐅᓯᒪᓂᖏᓐᓄᑦ ᐅᖃᐅᓯᔾᔨᒋᐊᕈᑎᒃᓴᐅᓇᔭᖅᑐᑦ ᑕᒪᐃᓐᓂᒃ ᖃᐅᔨᒪᔭᐅᑦᑎᐊᒃᑲᓐᓂᕆᐊᖃᕐᓂᐊᖅᑐᑦ ᐊᖑᓇᓱᒃᑕᐅᓯᒪᑎᒋᖃᑦᑕᕐᓂᖏᓐᓂᒃ ᑕᒪᐃᓐᓂᒃ ᓄᓇᓕᒡᔪᐊᕐᓂᒃ, ᐊᒻᒪᓗ ᑐᑭᓯᐅᒪᔭᑦᑎᐊᒃᑲᓐᓂᕆᐊᖃᖅᓱᑎᒃ ᐊᐃᕖᑦ ᐊᐅᓚᕙᖕᓂᖏᑦ ᓇᒧᖓᐅᖃᑕᕐᓂᖏᑦ ᓇᓃᖃᑦᑕᕐᓂᖏᓪᓗ.

ᑕᐃᒃᑯᐊ ᐊᒥᓲᑎᒋᓂᖏᑦ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᑐᑭᓕᐅᕈᑎᑦ ᐱᔪᓐᓇᐅᑕᐅᓲᖑᕗᑦ ᓇᓚᐅᑦᑖᖅᑕᐅᓂᖏᓐᓄᑦ ᐊᒥᓲᓂᖏᑦ ᐊᐃᕖᑦ ᐱᑕᖅᑕᐅᓯᒪᑦᑎᐊᕈᓐᓇᕋᔭᖅᑐᑦ ᑕᒪᐃᓐᓂᒃ ᐱᑕᖃᖅᑎᒋᓂᖏᓐᓂᒃ ᐊᕐᕌᒍᑕᒫᖅ ᐱᔾᔪᑕᐅᓗᑎᒃ ᐃᓄᖕᓄᑦ ᐱᓕᕆᐊᖑᔪᓕᒫᑦ, ᐅᓗᕆᐊᓇᕈᑎᖃᕐᓂᐊᖏᑦᑐᒥᒃ ᐊᒥᐊᒃᑯᖃᖅᑎᑦᑎᖏᓗᐊᕈᓐᓇᕐᓂᖅ. ᖃᐅᔨᒪᔭᐅᑦᑎᐊᒃᑲᓐᓂᕆᐊᖃᖅᐳᑦ ᒫᓐᓇᐅᓕᖅᑐᖅ ᓄᓈᖅᑕᐅᓯᒪᕙᖕᓂᖏᑦ ᐱᑕᖅᑕᐅᓯᒪᔪᑦ ᐊᖑᓇᓱᒃᑕᐅᓂᕐᒥᒃ ᐊᒻᒪᓗ ᐊᖑᓇᓱᒃᑕᐅᓂᖏᓐᓂᒃ ᔭᒐᐃᔭᐅᖃᑦᑕᖅᓯᒪᓂᖏᑦ ᐊᓐᓇᐃᔭᐅᓪᓗᑎᒡᓗ. ᐊᒥᓲᓂᖏᑦ ᐊᐃᕖᑦ ᑐᖁᖃᑦᑕᖅᑐᑦ ᐊᓯᖏᓐᓂᒃ ᐃᓄᐃᑦ ᐱᓕᕆᐊᕆᕙᒃᑕᖏᓐᓂᒃ ᐱᔾᔪᑎᖃᖅᑐᑦ (ᓲᕐᓗ ᓄᓗᐊᕐᓄᑦ ᓂᒐᕕᑕᐅᓯᒪᓂᖏᓐᓄᑦ, ᐅᒥᐊᕐᔪᐊᕐᓄᑦ ᑐᓗᖅᑕᐅᓯᒪᓂᖏᑦ) ᓱᓕ ᖃᐅᔨᒪᔭᐅᖏᒻᒪᑕ ᐃᓱᒪᒃᓴᖅᓯᐅᕈᑕᐅᔭᕆᐊᖃᕋᔭᕐᒥᔪᑦ ᑐᑭᓕᐅᖅᑕᐅᔪᓐᓇᖅᓯᓚᐅᖏᓐᓂᖏᓐᓂᒃ ᖃᓄᑎᒋ ᐱᑕᖅᑕᐅᓯᒪᔪᖃᕈᓐᓇᕐᓂᕐᒧᑦ ᐋᕿᒃᓯᔪᖃᕈᓐᓇᕋᔭᕐᓂᖅ. ᓇᓚᐅᑦᑖᕈᑏᑦ ᑕᐃᒃᑯᓇᖓᑦ ᐊᒥᓲᑎᒋᓂᖏᓐᓂᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᔪᓐᓇᕐᓂᖏᓂᒃ ᐅᖃᐅᓯᐅᓯᒪᔪᑦ ᐊᕕᒃᑐᖅᑕᐅᓯᒪᔪᓐᓇᖏᒻᒪᑕ ᐊᒥᓱᓂᒃ ᐊᔾᔨᒌᖏᑦᑑᑎᐅᔪᓂᒃ ᐃᓄᐃᑦ ᐱᓕᕆᕙᖕᓂᖏᓐᓄᑦ ᑐᖁ20ᔾᔪᑕᐅᕙᒃᑐᓂᒃ. ᑕᒪᐃᓐᓂᒃ ᐊᐃᕕᖃᕐᓂᖏᓐᓂᒃ, ᖃᐅᔨᒪᔭᐅᑦᑎᐊᒃᑲᓐᓂᕆᐊᓖᑦ ᐃᓄᐃᑦ ᐱᓕᕆᕙᖕᓂᖏᓐᓄᑦ ᑐᖁᔾᔪᑕᐅᕙᖕᒥᔪᓂᒃ, ᑐᑭᓕᐅᕈᓐᓇᖅᓯᓚᐅᖏᓐᓂᖏᓐᓂᒃ ᐊᒥᐊᒃᑯᖃᑦᑎᐊᕈᓐᓇᕐᓂᐊᖅᑐᓂᒃ ᐱᑕᖅᑕᐅᔪᒃᓴᓕᐅᕈᓐᓇᕐᓂᖅ.

ᐊᐃᕖᑦ ᓇᓃᖃᑕᕐᓂᖏᑦ ᐊᓯᔾᔨᖅᐸ20ᓕᐊᓯᒪᔫᔭᖅᐳᑦ; ᐊᓯᔾᔨᖅᓯᒪᓂᖏᓐᓄᑦ ᓯᑯᐃᑦ ᖃᓄᐃᓂᖏᓐᓂᑦ ᐊᒻᒪᓗ ᓯᓚᐅᑉ ᖃᓄᐃᓐᓂᖏᑦ, ᐱᔾᔪᑕᐅᔫᔮᓕᕐᒪᑕ ᐊᓯᔾᔨᖅᑕᐅᓂᖏᓐᓄᑦ ᓇᒧᖓᐅᖃᑕᕐᓂᖏᓐᓂᒃ ᓇᔪᖅᐸᒃᑕᖏᓐᓂᒃ ᓇᓃᖃᑕᕐᓂᖏᓄᓪᓗ. ᑕᒪᓐᓇ ᑕᐃᒪᐃᓐᓂᖓᓄᑦ ᐊᓯᔾᔨᖅᓯᔾᔪᑕᐅᓐᓇᕐᒥᖕᒪᑕ ᐱᑕᖃᕐᓂᖏᓐᓂᒃ ᐊᒥᓲᑎᒋᓂᖏᓐᓂᒡᓗ ᖃᓄᐃᓕᖓᓂᖏᓐᓂᒃ ᓯᕗᓂᒃᓴᐅᓂᐊᖅᑐᒥᒃ .

ᐊᐅᓚᑕᐅᓂᖏᓐᓂᒃᐃᓱᒪᒃᓴᖅᓯᐅᕈᑕᐅᔭᕆᐊᓖᑦ

The ᑕᐃᒃᑯᐊ ᑕᓪᓗᕈᑎᐅᑉ ᐃᒪᖓᓂᑦᑐ ᐊᒻᒪᓗ ᕼᐊᓴᓐ ᐱᒥ ᐊᒻᒪᓗ ᕿᑭᖅᑖᓘᑉ−ᐊᑯᑭᑦᑐᕐᒥᐅᓪᓗ ᐊᑯᓐᓂᖏᓐᓂᒃ ᐃᒪᕐᓂ HB-DS−ᒥᓲᑦ ᐊᐃᕖᑦ ᐊᖑᓇᓱᒃᑕᐅᖃᑕᕐᒥᖕᒪᑕ ᐊᑯᑭᑦᑐᕐᒥᐅᑕᓄᑦ, ᑐᖓᕕᐅᓪᓗᑎᒃ ᓴᕿᖃᑦᑕᖅᓯᒪᓂᖏᑦ ᓇᓗᓇᐃᒃᑯᑦᑎᖅᑕᐅᓯᒪᔪᑦ ᒪᓕᒃᑕᐅᓯᒪᓂᖏᓐᓂᒃ. ᓯᕗᓂᒃᓴᒥ ᐅᖃᐅᓯᐅᓂᖏᑦ

ᐱᔾᔪᑎᖃᖅᑐᑦ ᐊᐃᕖᑦ ᐊᒥᓲᑎᒋᓂᖏᓐᓂᒃ ᐱᑕᖅᑕᐅᖃᑦᑕᕐᓂᖏᓐᓂᒃ, ᐃᓚᖃᕆᐊᖃᖅᐳᑦ ᐱᑕᖅᑕᐅᓯᒪᖃᑕᕐᓂᖏᓐᓂᒃ ᐊᖑᓇᓱᒃᑎᓄᑦ ᓄᓇᕗᒻᒥ, ᓄᓇᕕᖕᒥ, ᐊᒻᒪᓗ ᐊᑯᑭᑦᑐᕐᒥᐅᑕᐅᓂ. ᒫᓐᓇᐅᔪᖅ, ᑲᓇᑕᒥᐅᓪᓗ ᐊᑯᑭᑦᑐᕐᒥᐅᓪᓗ ᑲᑐᔾᔨᖃᑎᒌᒎᑎᖃᖏᒻᒪᑕ ᐊᐅᓚᑦᑎᓂᕐᒥᓂᒃ ᐃᓕᑕᕆᔭᐅᓯᒪᔪᓂᒃ ᐋᕿᐅᒪᔪᓂᒃ, ᑕᐃᒃᑯᓇᖓᑦᓴᐃᓐᓇᖅ ᐊᐃᕕᖃᕐᕕᐅᓂᖏᓐᓂᒃ. ᑐᓴᐅᒪᖃᑦᑕᐅᑎᓂᖅᓴᐅᖁᔭᐅᓕᖅᐳᑦ ᐱᑕᖅᑕᐅᖃᑦᑕᕐᓂᖏᓐᓂᒃ ᖃᐅᔨᒪᔾᔪᑎᒃᓂᒃ ᑲᓇᑕᒥᐅᑕᓂᒃ ᐊᑯᑭᑦᑐᕐᒥᐅᑕᓂᒡᓗ, ᖃᐅᔨᒪᓇᖅᓯᓂᐊᕐᒪᑕ ᓇᓪᓕᐊᑦ ᓄᓇᓖᑦ ᑕᒪᒃᑭᖅᑐᓂᒃ ᓄᓇᓕᐊᓗᖕᓂᒃ ᐊᐃᕙᖕᓂᐊᖅᐸᖕᒪᖔᑖ ᐊᒻᒪᓗ ᖃᔅᓯᓐᓂᒃ ᐱᑕᖅᓯᕙᖕᒪᖔᑕ ᑕᐃᒃᑯᓂᖓᑦᓴᐃᓐᓇᖅ ᐊᐃᕕᖃᕐᕕᐅᔪᓂᒃ. ᐊᒻᒪᑕᐅᖅ, ᓱᓕ, ᖁᒻᒧᐊᒃᑎᑕᐅᓯᒪᔪᑎᒍᑦ
ᐊᔾᔨᓕᐅᖅᑕᐅᓯᒪᓂᖏᑦ ᐊᒻᒪᓗ ᑎᒥᖏᓐᓂᒃ ᐃᓕᑕᕆᔭᐅᔾᔪᑎᖏᓐᓂᒃ ᖃᐅᔨᓴᖅᑕᐅᔭᕆᐊᖃᕆᕗᑦ

ᑐᑭᓯᓇᖅᓯᔪᓐᓇᖁᓪᓗᒋᑦ ᐃᓚᒌᖃᑦᑕᕐᓂᖏᑦ ᐊᐃᕝᕙᖕᓂᐊᕐᕕᐅᕙᒃᑐᑦ ᒪᕐᕈᖕᓄᑦ ᓄᓇᓖᐊᓘᖕᓄᑦ. ᑭᖑᓪᓕᕐᒥ, ᐊᓯᖏᑦ ᐃᓄᐃᑦ ᐱᓕᕆᕙᖕᓂᖏᓐᓄᑦ ᑐᖁᔾᔪᑕᐅᕙᖏᑦ (ᓲᕐᓗ ᐅᒥᐊᕐᔪᐊᒃᑯᑦ ᑐᓗᖅᑕᐅᖃᑕᕐᓂᖏᑦ, ᓄᓗᐊᕐᓄᓪᓗ ᓂᒐᕕᖃᑕᖅᓯᒪᓂᖏᓐᓂᒃ), ᓈᓴᖅᑕᐅᓯᒪᒋᐊᖃᕐᒥᔪᑦ ᓈᒻᒪᓈᖅᓯᒪᑦᑎᐊᕐᓂᖅᓴᐅᔪᓂᒃ ᐊᒥᐊᒃᑯᖃᐃᓐᓇᕐᓂᐊᖅᑐᓂᒃ ᐱᑕᖅᑕᐅᑎᒋᔪᓐᓇᕐᓂᖏᓐᓂᒃ ᐅᖃᐅᔾᔨᒋᐊᕈᑕᐅᔪᓐᓇᕐᓂᐊᖅᑐᓂᒃ ᓴᕿᑎᑦᑎᔪᓐᓇᕐᓂᕐᒧᑦ.

ᑐᑭᓯᓂᐊᖏᖅᐃᐅᑎᐊᖅᓯᒪᔪᑦ

Ċᖅძᐊ ᖃᐅᔨᓴᖅᑎᓂᒃ ᐅᖃᐅᔨᔨᕆᐊᑭᑎᑦ ᐅᓂᒃᑲᓕᐊᑦ ᓴᖅᑭᑕᐅᓯᒪᔪᑦ ᐊᒃᑐᐱᐃᓐ 29-ᒥᒃ ᓄᕃᐱᐃᓐ 2, 2012-ᒧᑦ ᐊᖏᖅᔪᑕᒻᖅ ᑲᑎᒪᓂᖅᓯᓂᒃ ᑲᓇᐅᖏᑦᑐᑕᐃᑦ ᐅᒻᒪᔪᓕᒫᑦ ᐱᒻᔪᓕᓇᓕᐅᑦ ᐳᐃᓄᓕᒻᒥ ᖃᐅᔨᓴᖅᑎᓂᒃ ᖃᑎᖅᑭᐊᖅᑎᑦ ᑲᑎᒪᔨᖏᓪᓕᐅᑎᓂᒃ. ᐊᓯᒃᑲᓂᖅᓯᑎᑕᐅᖅ ᐅᖅᑲᒻᒪᑕᐅᑉᐹᖅᓯᒪᔪᑦ Ċᖅძᓇᖅᓱᖅᑐᑦ ᓴᖅᑭᑎᑕᐅᔪᒻᒪᕆᐊᖃᖅᑎᑦ ᖃᓄᐊᖅᑕᐅᕐᓂᐊᖅᓱᓂᒃᓂᖅᓴᒃ ᐅᕐᓂ [Fisheries and Oceans Canada (DFO) Science Advisory Schedule](#) ᐊᑐᐃᓐᓇᓕᑐᐊᖑᑎᒃ.

Stewart, R.E.A. 2008. Can we calculate total allowable harvests for walrus using potential biological removal? DFO Can. Sci. Adv. Sec. Res Doc. 2008/025. iv + 13 p.

Stewart, R.E.A., and Hamilton, J.W. 2013. Estimating total allowable removals for walrus (*Odobenus rosmarus rosmarus*) in Nunavut using the potential biological removal approach. DFO Can. Sci. Advis. Sec. Res. Doc. 2013/031. iii + 12 p.

Stewart, R.E.A., Lesage, V., Lawson, J.W., Cleator, H., and Martin, K.A. 2012. Science technical review of the draft environmental impact statement (EIS) for Baffinland's Mary River Project. DFO Can. Sci. Advis. Sec. Res. Doc. 2011/086. vi + 62 p.

Stewart, R.E.A., Born, E.W., Dunn, J.B., Koski, W.R., and Ryan, A.K. 2013a.Use of multiple methods to estimate walrus (*Odobenus rosmarus rosmarus*) abundance in the Penny Strait-Lancaster Sound and West Jones Sound stocks, Canada. NAMMCO Sci. Publ. 9.

Stewart, R.E.A., Hamilton, J.W., and Dunn, J.B. 2013. Results of Foxe Basin walrus (*Odobenus rosmarus rosmarus*) surveys: 2010-2011. DFO Can. Sci. Advis. Sec. Res. Doc. 2013/017. iv + 12 p.

Wade, P.R., and Angliss, R.P. 1997. Guidelines for assessing marine mammal stocks: report of the GAMMS Workshop April 3-5, 1996, Seattle, Washington. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-OPR-12. 93 p.

ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᓂᕐᒥᒃ ᐊᐃᕖᖅᑕᖃᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᑲᑎᓪᓗᒋᑦ ᐱᑕᖅᑕᐅᓐᓇᕐᓂᖏᑦ

22

ᑖᒃᑯᐊ ᐅᓂᑳᓕᐊᖏᑦᐊᑐᐃᓐᓇᐅᒋᕗᑦ ᐅᕙᖓᑦ:

ᐱᓕᕆᕝᕕᖓᓐᓂᒃ ᖃᐅᔨᓴᖅᑎᓂᒃ ᐅᖃᐅᔾᔨᒋᐊᖅᑏᑦ ᕿᑎᖅᐸᓯᐊᓂᒃ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᖅᐸᓯᐅᑉ ᐊᕕᒃᑐᖅᓯᒪᓂᖓᓄᑦ ᐃᖃᓗᓕᕆᔨᕐᔪᐊᒃᑯᑦ ᐊᒻᒪᓗ ᑕᕆᐅᕐᒥᐅᑕᐃᑦ ᑲᓇᑕᒥ (
501 University Crescent
ᐅᐃᓂᐸᐃᒡ, ᒪᓂᑑᐸ
R3T 2N6

ᐅᖄᓚᐅᑦ: (204) 983-5131
ᖃᕆᑕᐅᔭᒃᑯᑦ ᑎᑎᖅᑲᖅᑖᕐᕕᖓᑦ: xcna-csa-cas@dfo-mpo.gc.ca
ᖃᕆᑕᐅᔭᒃᑯᑦ ᑐᕌᕈᑎᖓᑦ ᑕᑯᓂᐊᖅᑕᐅᕕᖓᓄᑦ: www.dfo-mpo.gc.ca/csas-sccs/

ISSN 1919-5087
©, ᑯᐃᓐ ᐱᔪᓐᓇᐅᑎᖃᕐᓂᖓᒍᑦ ᑲᓇᑕᒥ, 2013

ᑐᑭᓯᓂᐊᕕᐅᔪᓐᓇᕐᓂᖏᓐᓄᑦ ᑖᒃᑯᐊ ᐅᖃᓕᒫᒐᐃᑦ ᑕᒻᒪᖅᑕᖅᓯᒪᖏᑦᑐᒥᒃ:

ᑐᑗᓵᐿᐅᕍᖓᑁ ᐃᖃᑠᑞᓽᓶᑈᑄᑁ ᐃᑔᑞᓽᓶᑈᑄᑤᑠ 2013. ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᓂᖏᑦ ᐊᒥᓲᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᑕᒪᕐᒥᒃ ᐱᔭᐅᔪᓐᓇᖅᑎᒋᓂᖏᑦ ᐊᐃᕖᑦ (ᓛᑎᓐᑎᑐᑦ ᐅᖃᐅᓯᒃᓴᐃᑦ ᑕᐃᔭᐅᔪᑦ (Odobenus rosmarus rosmarus) ᑲᓇᑕᐅᑉ ᐅᑭᐅᖅᑕᖅᑐᖓᓂ. ᑐᑗᓵᐿᐅᕍᖓᑁ ᐃᖃᑠᑞᓽᓶᑈᑄᑁ ᐃᑔᑞᓽᓶᑈᑄᑤᑠ ᑆᑛᐿᑐ ᐽᑂᑥᑔᓸᕌᓸᐇᑙᑁ ᐅᖃᐅᓼᓶᑉᐇᕈᐼᑁ Rep. 2013/034.
Also available in English:
DFO. 2013. Estimates of Abundance and Total Allowable Removals for Atlantic Walrus (Odobenus rosmarus rosmarus) in the Canadian Arctic. DFO Can. Sci. Advis. Sec. Sci.
Advis. Rep. 2013/034.
Aussi disponible en français:
DFO. 2013. Estimations de l'abondance et du total autorisé de prélèvements de morse de l'Atlantique (Odobenus rosmarus rosmarus) dans l'Arctique canadien. Secr. can. de consult. sci., Avis sci. 2013/034.