

Aikaisemmin kirjositsepon on todettu suosivan Kilpisjärvellä reheviä koivikoita (jotka eivät aina ole tiheitä). Tämän tiedonannon tulokset viittaavat siihen, että valoisuus on myös tärkeä tekijä lajin biotoopinvalinnassa Lapissa. Taulukossa 2 osoitetaan lisäksi, ettei karujen pesimäbiotooppien valinta riipu kannan tiheydestä. Harvan ja tiheän kannan aika- ja yksilöt näyttävät asettuvan reheviin ja karuihin koivikoihin samassa suhteessa.

Keskimääräinen munamäärä oli suurin harvassa koivikossa olevassa pöntössä (taul. 1), mikä selitetään aikaisen muninnan avulla (ns. kalenteriefekti). Sen sijaan lentopoikastuotossa ei havaittu pönttöjen ja biotooppien välisiä eroja (taul. 1), joten ainoa 'hyöty' kirjositsepolle avoimen biotoopin valinnasta näyttää olevan aikainen muninta ja suuri munamäärä. Tulos on yhdenmukainen aikaisempien Kilpisjärvellä saatujen tulosten kanssa, joiden mukaan biotoopin rehevyys tai karuus ei vaikuta lentopoikastuottoon, ja tukee olettamusta, että Lapissa epäedullinen sää vaikuttaa pääasiassa kirjositsepon pesinnän onnistumiseen.

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## The life history of a female Whooper Swan *Cygnus cygnus*

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In November 1970, a policeman telephoned me from Kuusamo (66°N) and asked what should be done with two cygnets abandoned by their parents. One of the birds was found on a snow-covered field, the other in a small, almost frozen brook. The birds were sent to southern Finland and were kept over the winter in the Aulanko nature reserve (61°N), where they became completely tame. On 21 May 1971 the birds were ringed and released on the nearby Tyköljänjärvi, a eutrophic lake with extensive *Equisetum limosum* stands, providing a good summer habitat for Whooper Swans. Here the birds stayed throughout the summer, keeping within a very small area of only some hectares. They spent most of the time just resting, especially during their moulting period. When the moult was over in August they made trips to other parts of the lake, expanding their area to 150 ha.

As the birds did not migrate with their parents in the first autumn, they were not able to leave the lake in 1971 either. At the end of November they were transported by car to Bölsviken on the southern coast, a regular resting site of migrating Whooper Swans. Here the birds immediately joined the

other swans. After a month the bay was frozen and the swans left the area, accompanied by one of the tame birds.

The other tame swan walked to a local farm and was taken in. Again it was kept over the winter in the Aulanko reserve and released in 1972 on Tyköljänjärvi. It left the lake, however, and was found in various parts of southern Finland up to late June 1972, after which no further observations have been reported.

The other swan (which later proved to be a female) came back from the migration to a lake lying about 40 km NE of Tyköljänjärvi, where it had spent the previous summer. It was loved and fed by the people living around the lake, but in the autumn it did not migrate south and was kept in the Aulanko nature reserve again. Summer 1973 the bird spent on Tyköljänjärvi, where its habits were as in 1971. This autumn it migrated south with transient Whooper Swans and came back in 1974 to the lake Keihäsjärvi in Kuru (61° 47'N), 75 km N of Tyköljänjärvi.

It arrived alone in 1974 but later paired with a male. The bird was now four years old and sexually mature. It nested on Keihäs-

TABLE 1. The nesting performance of on individually known female Whooper Swan in Kuru during five seasons.

Year	No. of eggs	No. of young fledged
1974	5	2
1975	9	6
1976	9	8
1977	8	7
1978	≥6	6
Total	37	29
Average <sup>1)</sup>	7.4 ± 1.6	5.8 ± 2.0

<sup>1)</sup> The number of eggs in 1978 is not known, but it was at least 6. If only those years are considered when the exact number of eggs was known, the value is 7.7.

järvi in each of the years 1974–78 and migrated normally. On 25 December 1978 it was reported from Jönköping in southern Sweden, 750 km SW of the breeding site. In 1979 it arrived together with the five last-year young but without its mate. The bird spent this summer alone on another lake, 14 km from its former breeding lake. Since summer 1979, no information has been received about this female Whooper Swan. The bird reached an age of at least 9 years and 3 months, the highest so far reported for ringed Whooper Swans (Saurola 1980).

This female bred for the first time at the age of four years, which is normal for the species (Scott et al. 1972). During the first year, the bird produced fewer eggs and fledged fewer cygnets than in later years (Table 1), as often noted before (cf. Haapanen et al. 1973). The average number of eggs was especially high, 2.6 eggs higher than the mean clutch size for southern Finland (Haapanen et al. 1973). No clutches larger than 7 eggs were known in Finland before, and 7-egg clutches constituted only 6 % of the total material. Blomgren (1974) mentions an uncertain case of 8 eggs from Sweden. Baumanis (1975) have found in the Latvian SSR a Whooper Swan nest with 10 eggs. The present female maintained its tameness throughout its life and was fed by people regularly. This extra energy may have affected the clutch size.

The female fledged 29 cygnets in five years. Normally, nine successful breeding seasons would have been needed to achieve this

number. In summer 1976 it fledged 8 cygnets, probably the highest number ever recorded. In the whole Finnish Whooper Swan population, no broods with more than 6 cygnets were known before. However, there is one recent unpublished observation from Northern Carelia of a brood with 7 cygnets, and Elmelid et al. (1977) also mention broods with up to 7 cygnets from southern Sweden.

From 1978 onwards, breeding Whooper Swans have been found in the area of Kuru on other waters besides Keihäsjärvi. The first of these breeding records was made when the young from the first nesting year in 1974 would be four years old. So it is most likely that the present female has initiated the local swan population.

### Selostus: Erään naarasjoutsenen elämäntarina

Lokakuussa 1970 Kuusamon poliisit pelastivat kaksi joutsenen poikasta talven kourista. Linnut hoidettiin yli talven Aulangon luonnonsuojelualueen lintulassa ja kesyntyivät täydellisesti. Keväällä linnut rengastettiin ja päästettiin läheiselle Tyköljänjärvelle, missä ne asustivat varsin pienellä alalla pääosan kesää. Loppukesästä ja syksystä niiden liikkuma-ala ulottui järven (150 ha) eri osiin. Marraskuun lopulla joutsenet vietiin Bölsvikenin merenlahdelle Bromarviin, missä lepäilee runsaasti joutsenia.

Kesyistä linnuista tarkasteltava naaras lähti muuttomatalle ja ilmestyi seuraavana vuonna Luopioisten Ämmänsjärvelle vain 40 km Tyköljänjärvestä. Lintu vietti seuraavan talven jälleen Aulangolla ja kesän Tyköljänjärvellä. Sieltä se lähti muuttomatalle ja ilmestyi huhtikuussa 1974 Kurun Keihäsjärvelle, pariutui ja jäi pesimään. Lintu pesi Keihäsjärvellä viitenä vuonna ja tuotti 29 lento-poikasta; kahtena vuonna se muni 9 munaa ja yhtenä 8 (taul. 1). Aikaisemmin ei Suomessa ole tavattu yli 7-munaisia pesiä eikä yli 7 poikasen poikuetta. Lintu säilyi koko elämänsä ajan kesynä ja ihastuneet ranta-asukkaat ruokkivat sitä. Tästä lienee johtunut runsas tuotanto.

V. 1979 joutsen palasi 5 poikasen kanssa, mutta ilman koirasta Keihäsjärvelle ja asusti kesän yksinään eräällä toisella järvellä Kurussa. Sen jälkeen siitä ei ole havaintoja. Neljä vuotta pesinnän alkamisen jälkeen eli 1978 Kurun seudulle ilmestyi toinenkin pesivä joutsenpari. Kanta on varmaankin syntynyt tämän kesyn joutsenen jälkeläisistä.

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The Razorbill *Alca torda* does not incubate two eggs

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Why do some bird species lay only one egg, while others lay two, three or even twenty? Among the hypotheses proposed to explain variation in avian clutch sizes, the best known is that of Lack (e.g. 1954): the number of eggs corresponds to the highest number of young which the parent birds are able to rear successfully. This hypothesis has been tested experimentally by adding extra eggs or young to the nest and then following the hatching success, growth and survival of the young.

About ten years ago, in early June, I made nine artificial 2-egg clutches in a Razorbill *Alca torda* colony in the archipelago of SW Finland. The egg-laying had just started so that the birds from which I took an egg for my experiments were able to lay a replacement.

During my next visit, 12 days later, I found the Razorbills incubating one egg only. In some of the nests the other egg had been rolled away, but if this had been prevented by the walls of the nest cavity, the adults incubated only one of the eggs. The other egg was cold.

In late July I observed that only one chick had hatched in each of the artificial 2-egg clutches. On examining the unhatched eggs, I found a small embryo in one of them, which indicated that to begin with both eggs had been incubated, but apparently not simultaneously.

Next I created two 2-chick broods by moving a newly hatched chick from one nest to another with a chick of the same age. I was not able to make more experimental twins, since my small daughters did not approve of my experiments and were crying besides me. After a week, when alone, I found that the young had gained in weight as follows:

Weight of the young (g)  
Just hatched One week old

*Artificial twins*

Clutch 1		
Chick A	55	118
Chick B	63	80
Clutch 2		
Chick A	58	124
Chick B	63	120

*Young reared alone*

Clutch 1		
Chick A	66	142
Clutch 2		
Chick A	(in egg)	147

When one week old, the twins weighed roughly 15 to 45 % less than the single chicks. From my small sample I deduce that the Razorbill is incapable of hatching two eggs instead of the normal one, and possibly also incapable of successfully rearing two young.

Similar observations have been made with some other sea-bird species. Rice & Kenyon (1962) found that the Laysan Albatross *Diomedea immutabilis* incubated only the normal single egg, and that artificially twinned broods produced far fewer fledglings than one-chick broods. The Giant Petrel *Macronektes giganteus* may occasionally lay two eggs, but they rarely both hatch and the two chicks never both survive to fledging (Warham 1962). However, Nelson (1964) found in the Gannet *Sula bassana* that hatching success in artificial 2-egg clutches was as high as in normal clutches of one egg, and that the fledging success of twins was not greatly inferior to that of single chicks.