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Gardens at remote lighthouses along the Norwegian coast. A botanical project

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Abstract

Et fyrhageprosjekt ble startet i 2002 med den målsetting, så langt det lot seg gjøre, å dokumentere bruk av hageplanter på norske fyrstasjoner. I løpet av prosjektet ble data fra vel 80 av et totalt antall på 207 fyr innsamlet ved besøk, opplysninger i litteraturen og intervjuer av personer som hadde bodd på betjente fyr. Mens noen fyr hadde opparbeidet seg flekker og arealer til slåttemark og dyrkning av blant annet poteter, hadde andre ingen ting, eller ikke større enn knapt 0,5 m2, med plass til en potetplante eller noen gulrøtter. Sterk vind fra havet eller fra nord kunne medføre jorderosjon, og rent generelt har klimatiske forhold vært en begrensende faktor. Ettårige vekster, som vanlige grønnsaker, ble dyrket, for eksempel forskjellige kål (*Brassica* spp.), gulrot (*Daucus carrota*), forskjellige løksorter (*Allium* spp.) og redikk (*Raphanus sativus*). De er borte nå, men arter som luftløk (*Allium cepa* f. *prolifera*) og gressløk (*A. schoenoprasum*) holder seg i live. I sørlige områder er kirsebær (*Prunus avium* og *P. cerasus*), plommer (*P. domestica*), epler (*Malus domestica*) og pære (*Pyrus communis*) kjent og finnes fremdeles mange steder. Rips, solbær og stikkelsbær (*Ribes* spp.) ble dyrket, og har klart seg frem til i dag. Andre vekster som fremdeles fines gjenstående etter tidligere hagebruk, er bl.a. sitkagran (*Picea sitkensis*) og andre treslag plantet som le mot vind, og vier, bl.a. korgpil (*Salix viminalis*), brukt til fletting av teiner og kurver. Den kanskje mest livskraftige planten som er funnet på mange av fyrstasjonene er rabarbra (*Rheum ×rhabarbarum*) – nærmest et standard innslag fra sør i landet til helt i nord. Flere nytteplanter, og noen prydplanter, for det meste enfrøbladete løk- og knollvekster, har overlevd. Ofte er de eneste levende bevis på tidligere hagebruk på stedet. Antall hagevekster synes å øke fra nord mot sør, men vekstforholdene har de fleste steder vært ganske ekstreme.

Introduction

In recent years an increased interest in garden studies has been noted. First of all, studies connected to archaeological excavations, and garden restoration and/or reconstruction projects. In most cases, such works have dealt with the history of formal gardens. The study of smaller gardens and more remote sites have been of less interest, despite the fact that most gardens, in most areas are nowadays small and, certainly in former periods, must have been small, and perhaps not even formal at all, but still important for cultivation and production of vegetables and other supplies needed by the owners.

The period of the manned and actively run lighthouses has in most countries now largely come to an end. Radio signals and GPS systems have taken over as navigation techniques, and the light signals of the remaining lighthouses are controlled by automatic devices needing minimal maintenance. Contrary to the many books dealing with the development of the different technical navigation systems over the years, hardly anything substantial and comprehensive is written about the way of life of the people living at the lighthouse stations along the coast. In Norway, some local reports exist, however, but are not really available for the public. Most reports are dealing with one or two stations only (e.g. Kopperstad 1977; Stokkeland 1983; Neumann 1991; Ersland 1992, 1999; Lindanger 1995; Eyden 1997) while others are more substantial reports for certain counties, as a part of the present project (Åsen 2004, 2006; see also: www.naturmuseum.no). A master thesis by Roald (Roald 2001) includes a good reference list to written sources.

The main aim of the on-going project has been to document as best as possible the selection of plants used and cultivated by the people at lighthouse stations, which plants were useful and also hardy enough to survive, how they were cultivated, and in particular to document the plants still remaining alive as living evidence of the former gardens. Indeed additional non botanical information has been added. Several persons in Trondheim, Stavanger, Bergen, and Kristiansand have been engaged in the work. The different lighthouse stations (county shortened in the text by letters) are marked on the maps fig. 1a North Norway, and fig. 1b South Norway, and station names are given with two-letters abbreviations for county included. This presentation is a survey of a report in

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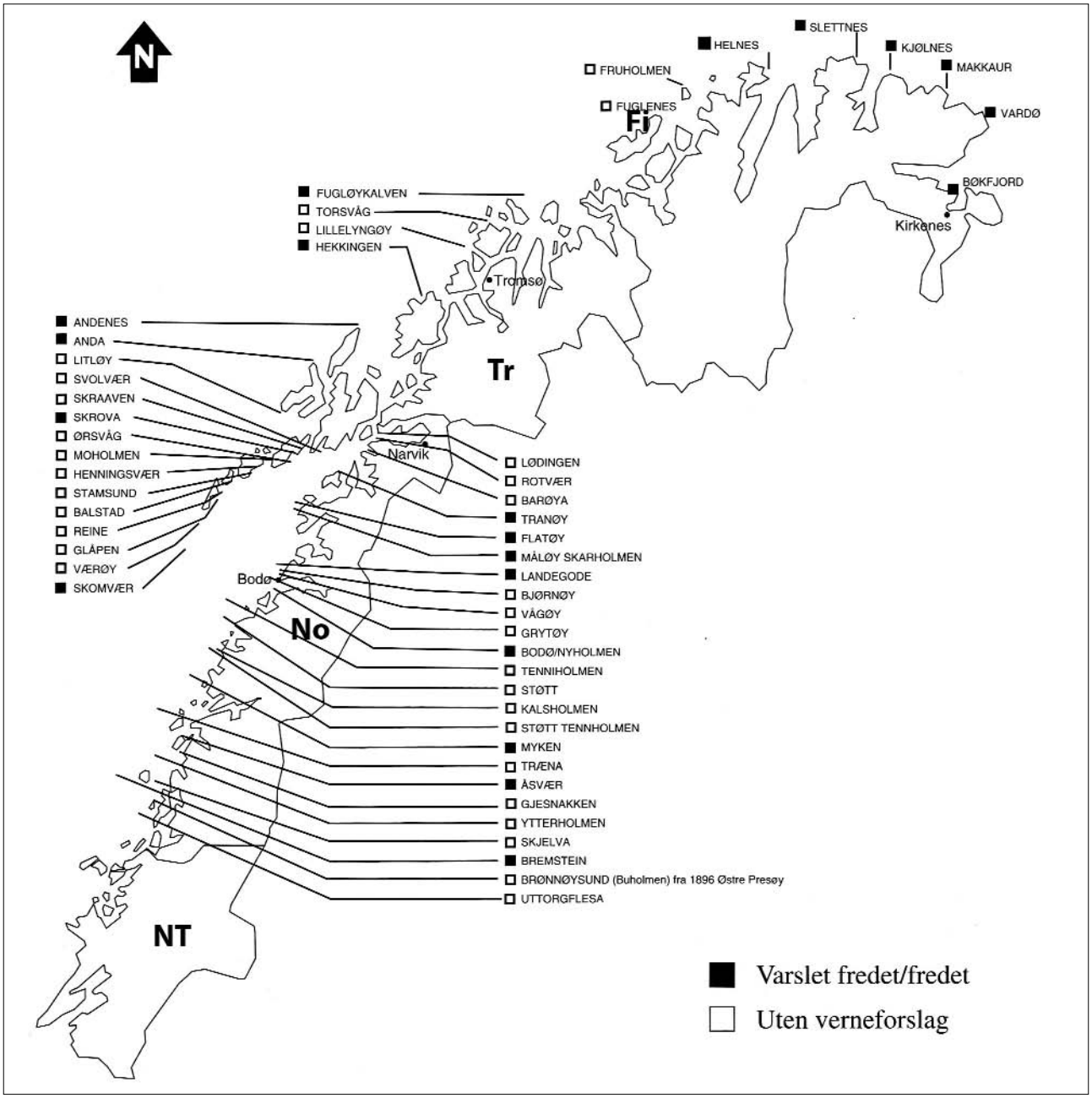

1a. - Survey of the Norwegian lighthouse. Northern Norway (after Monrad-Krohn 1997). Abbreviations for the different counties: Fi - Finmark, Tr - Troms, No - Nordland, NT - Nord-Trøndelag, ST - Sør-Trøndelag, MR - Møre og Romsdal, SF - Sogn og Fjordane, Ho - Hordaland, Ro - Rogaland, VA - Vest-Agder, AA - Aust-Agder, Te - Telemark, Bu - Buskerud, Vf - Vestfold, Op - Oppland, He - Hedemark, Oslo, Ak - Akershus, Øf - Østfold. Black square - station protected by law (after Monrad-Krohn 1997).

preparation. (Photo credits: Sverre Bakkevig, Dagfinn Moe, Randi Moe, Per Harald Salvesen, and Per Arvid Åsen.)

Geography

Lighthouses guiding seafarers along the coasts are known worldwide and have a history going back to the time when the first one, the Pharos lighthouse, was built on the coast just north of Alexandria in Egypt (destroyed in the 14th century) (Bergmann *et al*. 2007). But even before that, special navigation seamarks at the coast made by humans or special topographic features of the landscape were noted and used for safe navigation to and from the harbors or through difficult waters. While initially most navigation marks were useful only during daytime, seafarers during nighttime had to rely on navigation by the stars. Light signals were thus invented for guidance, for instance initially by the waiting families ashore. Such signals were dependent on someone to keep the fire alive during the night. Eventually lighthouses were invented. Many documents, books and papers have been written

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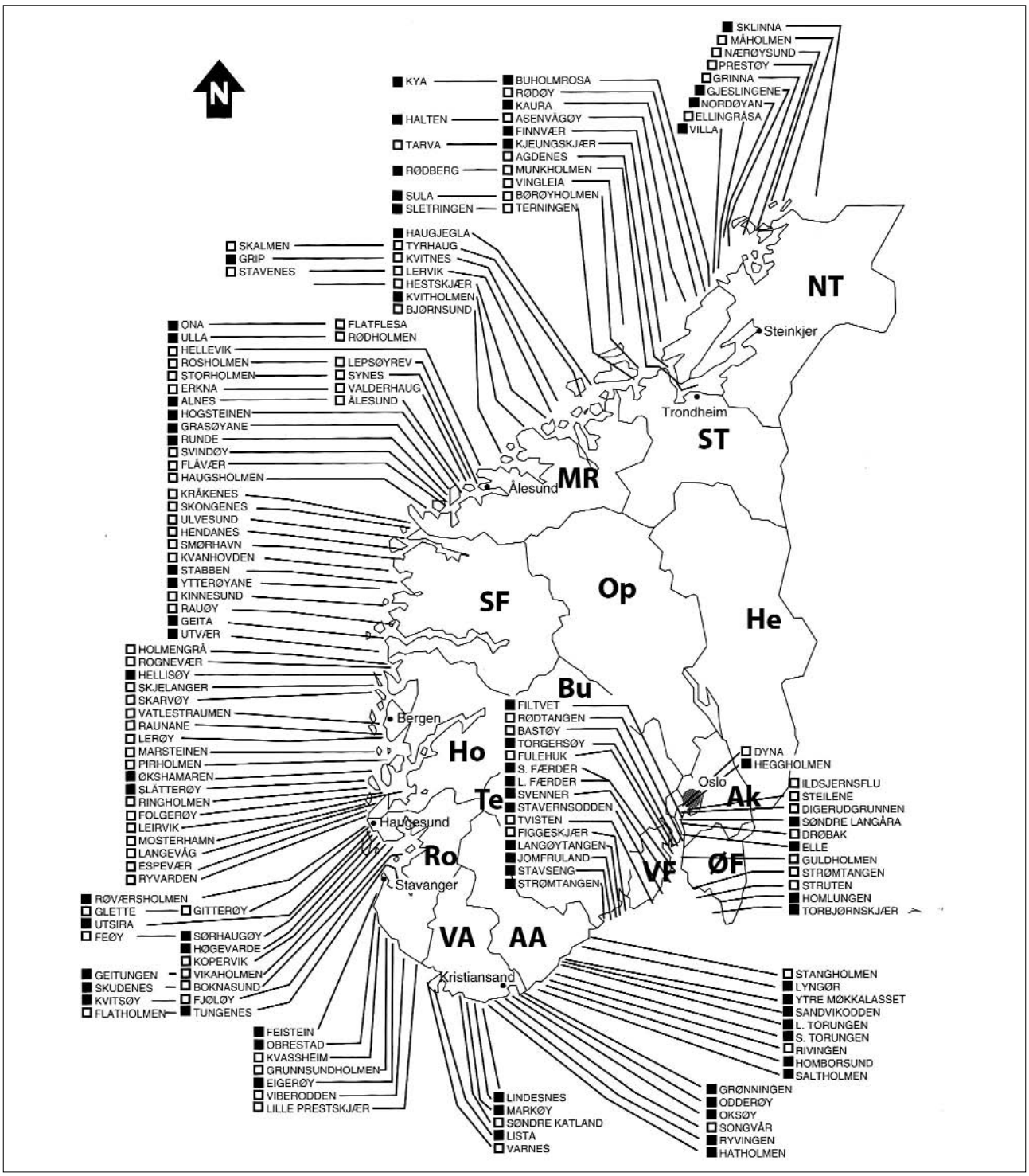

1b. - Survey of Norwegian lighthouses. Southern Norway. For details, see legend fig. 1a.

presenting the importance of finding the best place for such light signals, and on the technical development of the lighthouses etc., but only very few papers have dealt with the people who ran the lighthouses. Those people had to stay most of the time close to the beacon, often living there with their families, to keep the light shining through the nights.

The Norwegian coastline is split up by numerous fjords and along long stretches of navigable waters, thousands of larger and smaller islands and islets form a barrier ('skjærgård') guarding the inner, navigable waters from the ocean. Some main lighthouses placed at the outermost islands or points of land are giving long distance signals for ships approaching the coast. A larger number of smaller lighthouses are placed along the inner waters along the fjords and within the skjærgård belt, supporting the coastal trade, and also serving as guidance for an increasing fleet of smaller

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2. - Two of several remote lighthouse stations with hardly any soil. Måløy/Skarholmen station (No) to the left and Stabben (SF).

local boats. During the 19th and early 20th centuries many navigation marks, also lighthouses ("*fiskefyr*") were erected to serve only during the seasonal fisheries, for instance during the herring fisheries in early spring, but mostly the lighthouses were serving on an all year round basis.

To cover the huge challenges of keeping a system of light signals running along the Norwegian coast,

3. - Feistein lighthouse (Ro). The guide book for new staff members indicated no soil for cultivation. Small patches of soil are, however, found just to the right of the two white houses where *Iris pseudacorus* and *Hyacinthoides non-scripta* remain from former gardens.

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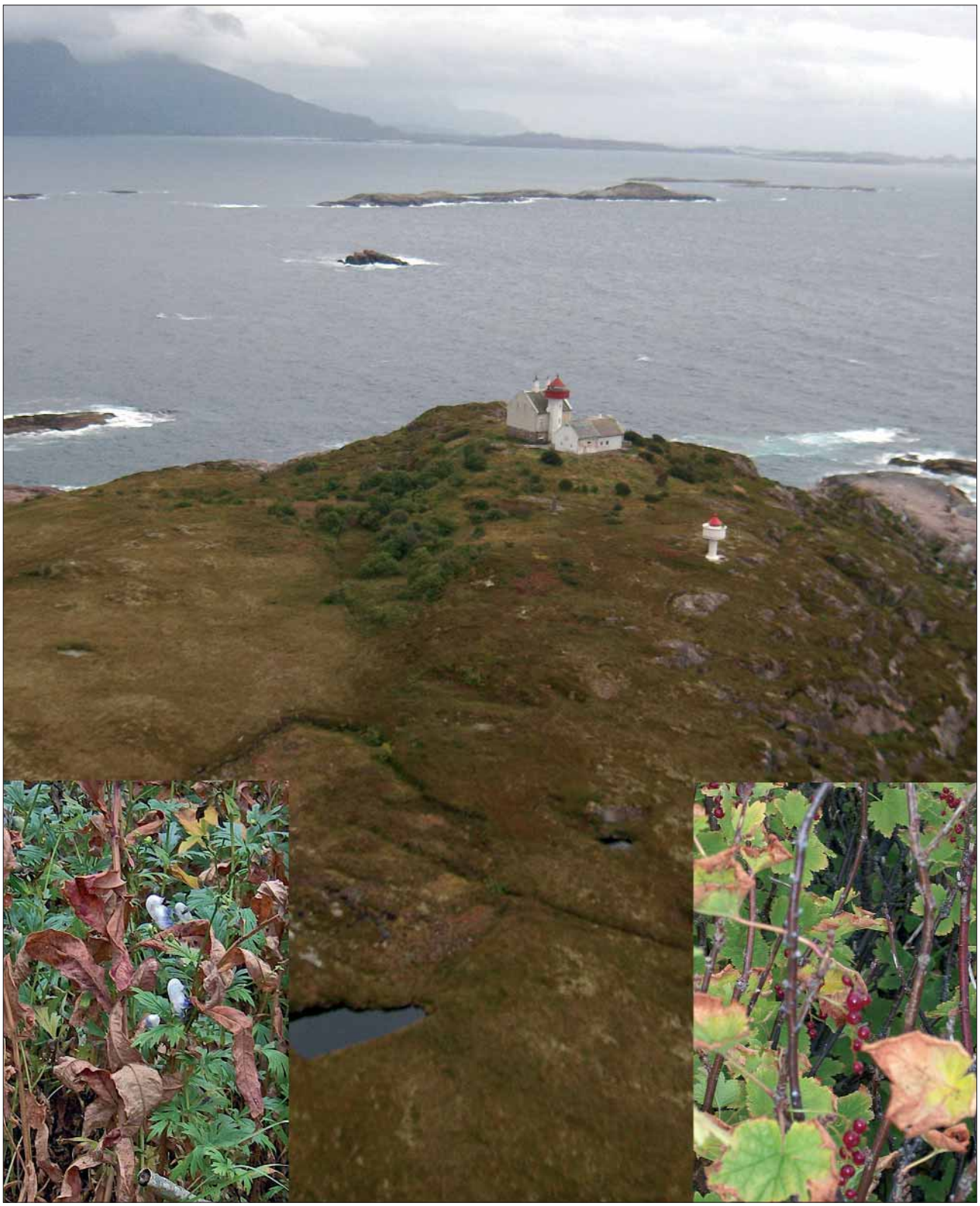

4. - Flatøy lighthouse (No) with areas for peat cutting, freshwater basins and in the slopes sheltered from the northerly winds, patches probably used for vegetables, potatoes etc. are seen. Here today some individuals of *Ribes rubrum* and some herbs for ornamental and medical use, like *Aconitum ×stoerkianum 'Bicolor'* remain extant.

especially during the dark season north of the Polar Circle, even the very smallest islet was taken into consideration, and often selected as the best place for erecting a lighthouse. This often had to be done in disregard of the problems facing the people who had to stay and make a living at such remote places for longer periods. The weather conditions along the Norwegian coast are known to be very rough, and even on days

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5. - The living quarters at the very exposed lighthouse station, Marstein (Ho), has been damaged several times by heavy sea waves. Despite marginal cultivation conditions, several plants indicating former gardening, have been documented, viz. *Allium schoenoprasum*, *Narcissus pseudonarcissus* 'Flore Pleno', *Crocosmia ×crocosmiiflora* and *Picea sitchensis*.

without strong winds, tides and swells together may be so strong that access to many lighthouses, even with modern boats, is difficult or even impossible. The Norwegian skjærgård belt differs completely from the situation in most other coastal areas, where the mainland does not have a belt of smaller islands and skerries in front of it. Therefore also the numbers of lighthouses along such coasts are significantly lower than in Norwegian waters.

A total number of 207 lighthouses are known along the coasts of Norway (Monrad-Krohn 1997; Bjørkhaug and Paulsson 1986, 1987). About 80 of these have been visited during the project period (Monrad-Krohn 1997; Bjørkhaug and Paulsson 1986, 1987). Some of the stations were closed down and completely abandoned about a hundred years ago, today the foundations of the houses may be the only visible remains left. Other stations have been running to the present day, but are now mostly completely automated and without any permanent staff. Some stations have been sold or rented to private persons or to institutions, and some are left to Nature, and if any usable land exists, it may have been taken over as pasture land by local farmers. If buildings or installations are still maintained, they are only visited by technical staff a couple of times a year for service and control.

Materials and Methods

A floristic documentation of a site indeed needs more than one visit, and some of the lighthouses have been visited several times, during spring, summer, and autumn for a thorough recording of the vegetation. It has often been difficult and very time consuming to organize trips to the more remote lighthouses, especially on the west coast and in Northern Norway. This includes availability of proper boats and reasonably good weather conditions. The economical support has been a limiting factor, but still in some cases helicopter transportation has been applied to reach remote sites in an efficient manner. An important source of data has been information given by family members and descendants of the people once serving at the different stations or by former visitors to the stations. Herbarium specimens have been collected and deposited to Herbarium BG and KMN, and samples of living material have been collected for cultivation and further study at the Arboretum and Botanical garden (University of Bergen) and Agder Natural History Museum and Botanical Garden in Kristiansand. A special garden containing plants from different lighthouses has been established at Lindesnes lighthouse (VA) located at the southernmost tip of Norway.

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6. - *Rubus laciniatus* was found at the remote lighthouse station, Holmengrå (Ho), introduced by birds or man?

The mode of living

A limiting factor for the families living at remote lighthouse stations has always been the supply of fresh food. Where available space and weather conditions allowed, the lighthouse families would keep at least one cow, supplying fresh milk to the children. A goat or two or some few sheep may often have been kept, depending on available pastures, and, of special importance, the availability of additional winter fodder. Milk from the animals could be used mixed with milk powder or condensed milk for the children. It is well known that when the children grew older, the cow was slaughtered, and the hay harvested was sold to neighbouring stations to earn some money. At a few lighthouses it has been recorded that a pig was kept, and also chickens were kept at several stations. Supplies of flavor, salt, sugar, milk powder, and other necessities had to be taken in substantial quantities in the early autumn as provisions for the winter. Fish was angled when possible, when the weather was suitable and normally only during some few months of the year. Fish could be cooked fresh, or preserved dried or salted, - and meat was treated in a similar way. Eggs from hens and collected from wild sea birds were stored. Wild birds killed when flying towards the strong light were also used. A supply in shortage for the people living at the lighthouses was fresh fruit, berries, vegetables etc. for food, but also plants for traditional medicine often was in short supply. Every square meter of ground that could be cultivated was used, even if not more than ½ m^2 or less, like the situation on Stabben (SF) (observed by DM), or Søre Katland (VA) (observed by PAÅ).

People applying for a job at a lighthouse station were known to check the capacity for growing vegetables or other crops, not only for the staff, but more importantly what would be available for his family. A standard catalogue made in 1921 (NN 1921) listing all the lighthouses in Norway at that time, records information on the 'jordvei', i.e. the amount of land available for the master of the lighthouse and the other staff members, depending on rank. In many cases the figure given is 0, not only for the low rank staff, but taken all together. In case some square meters would be available, only the lowest quality land, often facing northwest to northeast and exposed to winds, was offered to the assistant. Pastures are evaluated as well, and sometimes grass or hay production in good years sufficient for ½ cow, is mentioned. The rest would have to be brought from elsewhere.

Normally people at the lighthouses had to buy wood, oil, or coal for heating. In some few cases bogs and mires existed and peat could be taken and dried for heating. Drift wood found on the shores was very popular and would be collected during spring and summer, a common work especially in the north of Norway.

Norway's first lighthouse was established in 1655-56 at Lindesnes (VA) 57° 59' N, the southernmost point on the mainland of Norway. The next one was established in 1696, and all together 12 lighthouses were put into operation until 1828. Since then several others

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7. - A photo taken in 1948 from the top of Lista lighthouse station (VA) showing the kitchen garden. (Photo: unknown).

where built during the 19th century, and indeed during the 20th century. During the early 1900-s an evaluation of the position of the different lighthouse stations took place, and several lighthouses were closed permanently. One of the first ones to be abandoned was Lødingen fyrstasjon (No) in 1914.

Several books have dealt with the history of the Norwegian lighthouses (e.g. Rode 1941; Bjørkhaug and Paulsson 1986, 1987; Monrad-Krohn 1997) and a lot of technical information has been documented. Episodes of shipwrecks and extreme weather catastrophes have often been added. The work of women and children, which very often was necessary for securing the food supply, gardening etc. has mostly been neglected and has never been a preferred topic of the authors.

There are many examples of remote stations without any kind of soil for cultivation, and therefore of minor interest for us in the present context of gardening, among theses are Søre Katland (VA), Torbjørnskjær (ØF), Stabben (SF), and Maløy/Skarholmen (No). Here we mention an example from the official survey (NN 1921), where, as an information to potential applicants to the Kya lighthouse station (ST), that the station (as many others) is exposed to strong tides and waves from the ocean, and that the difficult harbor conditions required people with good nerves. Ocean waves rather frequently wash over the whole tiny islands. At Stabben lighthouse (SF), people still tried to grow potatoes and carrots in a small spot of less than ½ m^2. After harvesting, they had to collect the soil and keep it indoors until the next year. If not, the wind and sea would completely have washed away their 'garden'.

After spending years in such a station, people normally applied for a better place, with better access and weather conditions, and with more stable soil and a potential for keeping some chicken, sheep, a pig, or perhaps later on in their career, a cow. The official catalog (NN 1921) for applicants for jobs at the different stations describe the conditions, also fields for cultivation, 'jordvei', and includes details on the potential for pastures and hayfields in addition to small cultivated fields, from some 1-2 m^2 in size and upwards. Still ornamentals must have been grown even at the very smallest and most barren islets. People often extended this by building small terraces, 10-15 cm high, or used hollows or depressions for cultivation, always trying to find the places best sheltered from the main wind direction.

Plants extant from former lighthouse gardens in Norway

Trees and shrubs

During the project, different trees and tall shrub species have been recorded at lighthouses in South Norway that are interpreted as extant from former gardening. Among these are sycamore (*Acer pseudoplatanus*), horse chestnut (*Aesculus hippocastanum*), sitka spruce (*Picea sitchensis*), white spruce (*P. glauca*), dwarf mountain pine (*Pinus mugo*), different willow species (*Salix viminalis* and *S. viminalis*-hybrids) and guelder rose (*Viburnum opulus*). Native species, like white birch (*Betula pubescens*) and rowan (*Sorbus aucuparia*) are often occurring in gardens, but it is often impossible to decide whether these species have spread spontaneously also to the remote lighthouse stations.

Rather sensitive and surprisingly warmth loving fruit trees, like apples (*Malus domestica*), pears (*Pyrus communis*), plum trees (*Prunus domestica*), cherries (*P. avium* and cultivars), and sour cherry (*P. cerasus*) have been found at several stations in the south. On the bare, wind swept Flatholmen (Ro) a few rather tasty fruits of the sour cherry were found on a little tree standing within a stone enclosure of about 5 m^2, protecting it from sheep browsing. On the southern coast all the fruit tree species are fairly common. At a favorable spot at Lyngør lighthouse (AA) a grape-vine was found, however, this is probably a rather new addition to the lighthouse garden flora.

North of the Polar Circle, sitka spruce (the counties No, and Tr and Fi) (fig. 1a) sitka spruce and dwarf mountain pine are the more commonly planted trees found. Sitka spruce is perhaps the more commonly seen species, despite the wind and salt water drift reducing the growth and 'burning' the leaves. The northernmost site for sitka spruce is so far Skrova lighthouse (No) in the Lofoten archipelago (North Norway). In most cases the species is grown as a shelter against strong winds, and is not used for anything else. At southern stations the sitka spruce is readily propagating itself.

Willows are found rather frequently close to lighthouse buildings. They function not only as shelter, they were in former days also used for different crafts,

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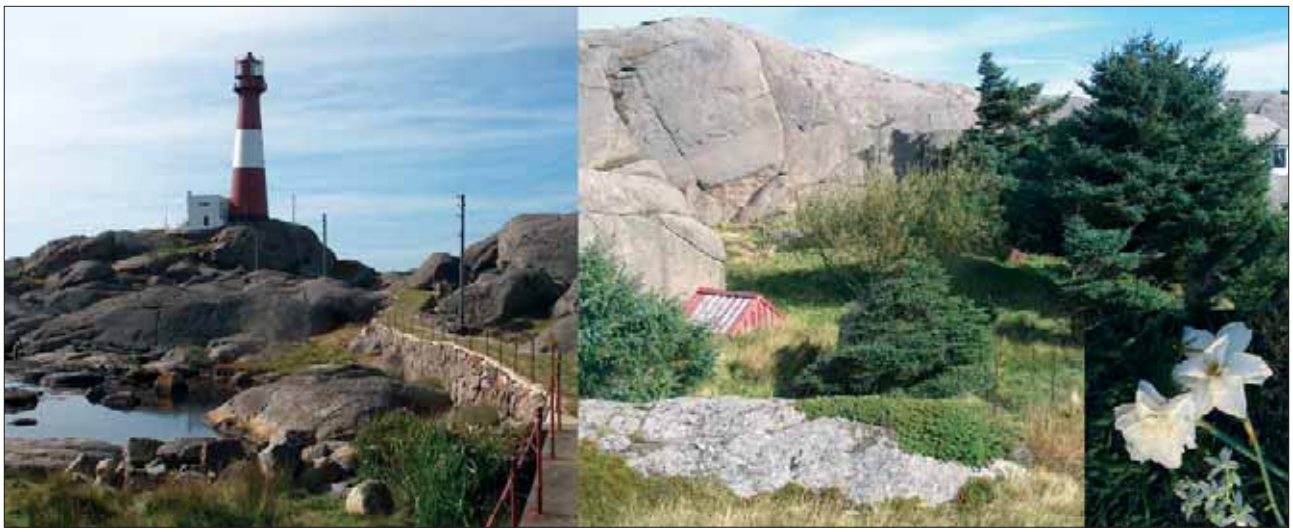
8. - Examples of areas used for gardening. To the left, the Utsira lighthouse station (Ro) with several different garden fields. The closest one, the fenced garden, belonged to the master of the station, the one in the background belonged to one of the assistents. To day different ornamental shrubs and herbs have survived. To the right, garden patches arranged in small terraces were used for vegetables at Vibberodden station (Ro).

repair of baskets, and for making traps for fish, crabs and lobster. They may have been used also for medical purposes as a relief for headaches or fewer (Roth *et al*. 1994). At Hatholmen (VA) lighthouse the osier (*Salix viminalis*) was especially cultivated for making traps for lobster and crabs. The tree is still standing as a relict from cultivation. The same may be the case at several other stations where the species (also as an unspecified hybrid) has been found extant from cultivation [Flatholmen, Tungenes, Utsira (all Ro) and Raunane (Ho)].

At several stations the white beam (*Sorbus hybrida*) and elder (*Sambucus nigra*) have been recorded. The pith of the elder stems is known as a material for making wicks for candles, and the flowers and berries for making juice, and also a tea for medicine. The lilac (*Syringa vulgaris*) has been recorded at several lighthouses on the southern and southwestern coasts north to Tungenes (Ro). In one individual, standing within the fenced courtyard, an age of minimum 55 years was estimated based on the available tree rings. At a few lighthouses, also the privet (*Ligustrum vulgare*) (Egerøy Ro) and Japanese privet (*L. obovatum*) (Utsira Ro) have been found. Any important practical use is of these three latter garden shrubs is not known, except for as ornament. It is important to make a note here of the occurrence of elm (*Ulmus glabra*) at Skrova lighthouse (No), an observation of very special interest, since this locality is well north of its natural distribution range (Moe 1998), even if it is also known to occur in more sheltered gardens a little north of Skrova.

Growing berries for making preserves or wine has obviously been a widespread activity at the lighthouses. Red currant (*Ribes* ×*pallidum* and *R. rubrum*), black



9. - Egerøya station (Ro) has one of the largest towers. The dwelling houses some few hundred meters away have space for some trees, fields for potatoes and vegetable cultivation, fruit trees and ornamentals like *Narcissus poëticus* 'Flore Pleno' and *Ornitogalum umbellatum*.

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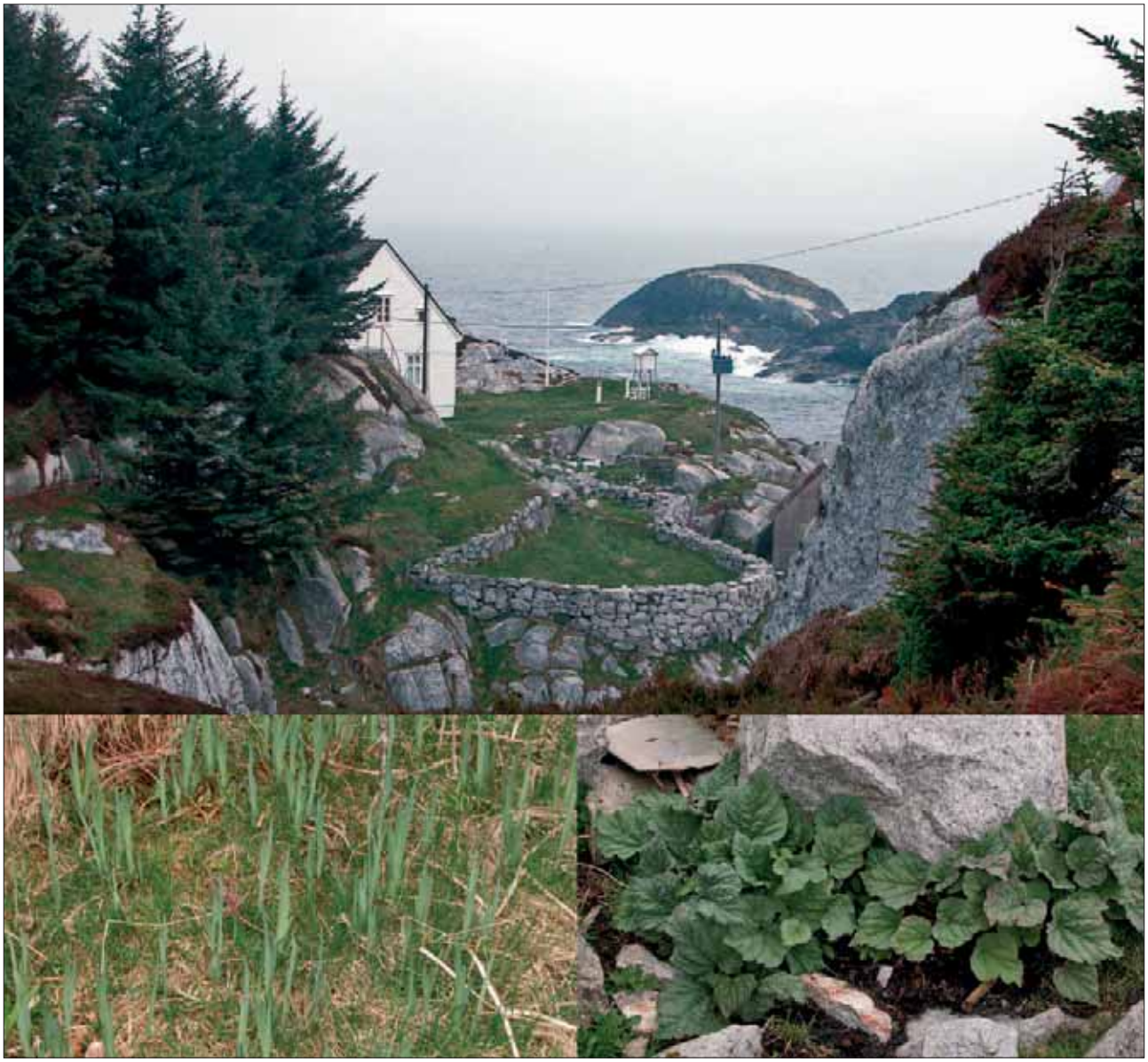

10. - The Slåtterøy station (Ho) is a more medium ranged station, with both pasture and garden. *Iris pseudacorus* as well as *Rheum* ×*rhabarbarum* are recorded.

currant (*R. nigrum*), and gooseberry (*R. uva-crispa*) are recorded quite frequently, whereas the black gooseberry (*R. divaricatus*) has been observed only once (Raunane). North of the Polar Circle only red currant (with tasty berries) was found, at Flatøy lighthouse (No) in a garden effectively sheltered from the north winds, and nicely facing southwards. Raspberries (*Rubus ideaus*) is found at several stations, however it is often hard to determine if it is a remnant of former gardening.

Roses have been popular, but have been found most frequently in the southern parts. Several taxa / species have been collected, the most frequent one being the japanese rose (*Rosa rugosa*), probably often grown for its profusion of large hips. The most common form at the lighthouses, at least towards the north is the one with simple flowers. At Kinn station (SF) the species was found planted in a field, about 5 x 5 meter. Similar plantations were seen at Utsira (Ro). This indicates a special use of the fruit which in earlier days were collected and utilised in different ways because of the content of C-vitamin, which always has been a limiting factor in a remote household. It is known that this species easily can spread by birds or also by floating on seawater. Single individuals of *R. rugosa* were found several places at shores also outside of cultivated areas. Single plants, therefore, do not necessarily indicate a human introduction. At the southern lighthouse stations, people often dug up wild growing specimens and planted them in the lighthouse gardens.

Roses grow very well in sheltered places, but if exposed to wind and salt drift from the sea, the leaves are

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11. - Among the introduced plants, the multi used rhubard (*Rheum ×rhabarbarum*) is the most frequent one seen at the lighthouse stations today, here with some leaves at Tennholmen (No), but also in the Finmark county (Fi). *Rosa rugosa,* with its C-vitamin rich fruits, was cultivated and used, like here at the former Kinn lighthouse station (SF).

12. - Among the introduced plants, the bulbous herbs, like different *Allium* and *Narcissus* species have been able to survive, and have become naturalized like the daffodil (*Narcissus pseudonarcissus* 'Flore Pleno') at Store Torungen station (AA). More rarely tulips (*Tulipa ×gesneriana*) may survive, like here at Kvasheim station (Ro).

often 'burned' along the edges, and partly browned and damaged. This also goes for the perennials. Some individuals of *Rosa rugosa* found in lighthouse gardens belong to filled form, red or white (*R. rugosa* 'Flore Pleno'). In the flowering season, the scent and beauty of the flowers indeed must have been of interest to the owners. Other roses found more rarely and in favourable stations in the south, include *Rosa ×alba* 'Maxima' found at three stations, whereas 'Minette' and the bourbon rose 'Great Western' were observed at one station each. These roses were probably cultivated solely for ornament and pleasure (scent?).

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13. - Sketches are made for all lighthouse stations along the Norwegian coast with different information about the use of properties, in a few cases also with some marks to gardening. Local vegetable cultivation took place at the Ona lighthouse station (MR), but data in the map about gardens or gardening are lacking. Several garden species have been recorded like *Bellis perennis*, *Ribes rubrum*, *Tanacetum vulgare,* different *Narcissus* species and indeed *Rheum* ×*rhabarbarum* (Map made in 1957, after Bjørkhaug and Paulsson 1987).

Herbs

A relatively long list of herbs is known from lighthouse gardens. Also weeds or more naturalized introduced garden plants, like the daisy, *Bellis perennis*, are in some cases noted.

Obviously perennials can survive for a longer period than annuals. While a number of different vegetables are known from tradition and based on interviews to have been used or cultivated, no annual vegetable species have been recorded as extant in lighthouse gardens. In a couple of cases live potato plants obviously surviving one winter or two have been recorded, but probably not as remnants from cultivation in a lighthouse garden. At Feistein (Ro) a few specimens of oilseed (*Brassica napus* ssp. *oleifera*) were found, probably having escaped from oilseed fields on the mainland.

In the 1930's Ryvingen (VA), the southernmost lighthouse in Norway, was famous for its tasty onions, also a variety of other vegetables were cultivated here, e.g. carrots, cabbages, salad, tomatoes, leeks, celery and potatoes. Tree onion (*Allium cepa* f. *proliferum*) is recorded as extant at the Lindesnes (VA) and Tungenes

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stations (Ro) while chives (*A. schoenoprasum*) has been recorded growing in the remains of a small garden at Marstein lighthouse (Ho). Sand leek (*Allium scorodoprasum*) grows in profusion at Homborsund lighthouse (AA), and was recorded at Svenner lighthouse (Vf) in 1997. The by far most often recorded utility plant extant from cultivation at lighthouses is, however, the rhubarb (*Rheum rhabarbarum*). It has been recorded from the northern part of Finmark County, at Makkaur station (Fi) to the southern Lista lighthouse station (VA), where it has been extensively cultivated and also used in winemaking.

The majorities of the extant perennials are monocotyledons and have persistent subterranean corms or bulbs. In the south, both the pheasant's-eye (*Narcissus poëticus*) and the daffodil (*N. pseudonarcissus*) are common. One report indicates that the pheasant's-eye together with tulips were cultivated in larger numbers for sale in the nearest town (Risør, S Norway). It seems that the *Narcissus* species will survive for a long time after the lighthouse gardens have been abandoned. For instance Markøy lighthouse (VA) was abandoned in 1844, and the pheasant's-eye is still growing there! Daffodils (*N. pseudonarcissus* 'Flore Pleno') have also been recorded at the Ryvarden (Ho), Marstein (Ho) and Ona (MR) stations. The more commonly found perennials except for the rhubarb and daffodils are as follows: [Here only data from western and south Norway] *Iris pseudacorus* (4 stations, possibly not always cultivated) and *I. sibirica* (2 stations), *Hyacinthoides non-scripta* (3 stations), *Crocosmia* ×*crocosmiiflora* (3 stations), *Aquilegia vulgaris* (3 stations), *Hemerocallis lutea* (2 stations), *Aconitum napellus* and *A.* ×*stoerkianum* (2 stations in addition to 2 stations in North Norway). The majority of these are ornamentals, but a few may also have served medical purposes.

It is of no surprise that the number of taxa is highest in the southern lighthouse stations. For example at Lista lighthouse garden (VA) over 50 taxa have been recorded, and at Utsira lighthouse (Ro) 36 taxa of extant garden plants where found. Towards the north, the number of taxa is generally reduced to none. The number of garden plant species recorded at each station still varies a lot, from only one species or one individual at some places, to many different species, even at the same latitude. The main factors determining the number of taxa locally are first of all how sheltered or extensive the garden has been. In the very small gardens, the precious soil obviously has been used for food and vegetables. On more extensive grounds, trees and shrubs for utility have been grown. Still ornamentals must have been grown even at the very smallest and most barren islets. Another factor obviously playing an important part is the period of time since active cultivation ceased, or since the station was converted from a family station into a station with only one or two service men on watch.

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