BioInvasions Records (2021) Volume 10, Issue 1: 28–32

Rapid Communication

Discoveries and fate of six ant (Hymenoptera, Formicidae) species on the Faroe Islands

Sjúrður Hammer[1,*] and Jens-Kjeld Jensen[2]

[1]*Umhvørvisstovan – Environment Agency, Traðagøta 38, FO-165 Argir, Faroe Islands*
[2]*Í Geilini 37, FO-270 Nólsoy, Faroe Islands*

Author e-mails: *sjurdur@hammer.fo (SH), nolsoy@gmail.com (JKJ)*

**Corresponding author*

Citation: Hammer S, Jensen J-K (2021) Discoveries and fate of six ant (Hymenoptera, Formicidae) species on the Faroe Islands. *BioInvasions Records* 10(1): 28–32, https://doi.org/10.3391/bir.2021.10.1.04

Received: 15 May 2020
Accepted: 11 October 2020
Published: 9 December 2020

Handling editor: Ben Hoffmann
Thematic editor: Stelios Katsanevakis

Abstract

Ants have historically not been recorded on the Faroe Islands. We report ants on the Faroe Islands for the first time, with all detections assumed to be recent accidental arrivals with human commerce. We detail thirteen detections of six ant species. The black garden ant *Lasius niger* has been found seven times since 1996, five times as established colonies. The red wood ant *Formica rufa, Camponotus fallax* and two detections of black garden ant *Lasius niger* were discovered in low numbers (1–4 individuals), and independent of any source of origin. No colonies of these species were ever found and the incursions are presumed to have died naturally. Pharaoh ant *Monomorium pharaonis* was discovered on a seafaring vessel and once in a private home. The incursion in the private home was eradicated but it is unknown what action was taken on the ship. Ghost ant *Tapinoma melanocephalum* was discovered on a fishing vessel and eradicated. *Tapinoma ibericum* was found in a pack of purchased fruits. We anticipate that ant incursions to the Faroe Islands will increase with increasing human commerce, and that the ability for some species to establish viable colonies will also increase.

Key words: anthropogenic introduction, transport, *Formica, Camponotus, Lasius, Monomorium, Tapinoma*

Introduction

The Faroe Islands (Faroes hereafter) are an archipelago located in the northeastern Atlantic Ocean, 460 km South East of Iceland, and 600 km West of Norway. The archipelago comprises 18 islands of which 17 are inhabited by humans. There is currently no regulation or monitoring to prevent the unintended import of alien invasive species through the importation of trees with soil, pot plants in soil, sod etc. The islands have seen significant economic growth since 2000, and since 2011 the quantity of imported goods has more than doubled to 720 thousand tonnes per year (Statistics Faroe Islands 2020). This has inevitably resulted in an increase of alien invertebrates to the Faroes, such as several new species of social wasps (Hammer and Jensen 2019), land snails (Jensen et al. 2014) and bumblebees (Jensen and Madsen 2018). With the continued import of plants and sods,

Table 1. Discoveries of ants in the Faroe Islands with first species discovery in bold.

Year	Species	Location	Person who collected the ant	Person who identified the species
1996	***Lasius niger***	Tórshavn	Mogens Frost Christensen	Dorete Bloch
1999	*Lasius niger*	Tórshavn	Jonhard Dahl- Jacobsen	Mogens Frost Christensen
2004	*Lasius niger*	Tórshavn	Ingigerð á Trøðni	Mogens Frost Christensen
2004	*Lasius niger*	Tórshavn	Leif Ellingsgaard	Mogens Frost Christensen
2008	*Lasius niger*	Tórshavn	Tróndur G. Leivsson	Dorete Bloch
2010	*Lasius niger*	Tórshavn	Karl Vang	Mogens Frost Christensen
2019	*Lasius niger*	Oyrabakki	Esther Mikkelsen	Jørn Bittcher
2003	***Monomorium pharaonis***	Tórshavn	Vinjard Magnussen	Mogens Gissel Nielsen
2007	*Monomorium pharaonis*	Tórshavn	Dorete Bloch	Dorete Bloch
2017	***Camponotus fallax***	Tórshavn	Dánial Jespersen	Jørn Bittcher
2017	***Tapinoma melanocephalum***	Oyrabakki	Tóri Simonsen	Jørn Bittcher
2018	***Formica rufa***	Fuglafjørður	Sheila Sigurdsdóttir	Jørn Bittcher
2019	***Tapinoma ibericum***	Tórshavn	Boudicca Gulklett	Jørn Bittcher

combined with climate change improving the climate suitability for many invertebrates on the islands, we expect an increase in invertebrate incursions and establishment. Historical descriptions of Faroese fauna are quite extensive (e.g. Kryger and Schmiedeknecht 1938), but to date we are unaware of any documentation of ants. Here we document all known detections of ants on the Faroes as well as their fate.

Materials and methods

The collection of ant specimens and their data on the islands has been conducted and accumulated over twenty years by Jens-Kjeld Jensen via interactions with the general public, occasionally prompted through advertisements in local newspapers. All the specimens collected were lodged in the National Museum's collection, however the specimens of black garden ant from 1996 and 2008 have unfortunately been lost. We inspected all of the ant specimens and archived data to compile a comprehensive list of all detections. Species identifications were confirmed by ant specialists using the keys Collingwood (1979), Seifert et al. (2017), and Seifert (2018). We also collated additional information about each detection including abundance (e.g. nest *vs.* few individuals), mode of transport (e.g. pot plant), treatment (if any) and subsequent fate of the ants.

Results

Since 1996, six species have been found in thirteen separate discoveries (Table 1): Black garden ant *Lasius niger* Linnaeus, 1758, pharaoh ant *Monomorium pharaonis* Linnaeus, 1758, *Camponotus fallax* Nylander, 1856, Ghost ant *Tapinoma melanocephalum* Fabricius, 1793, red wood ant *Formica rufa* Linnaeus, 1761 and *Tapinoma ibericum* Santschi, 1925 (Table 1).

Black garden ant *Lasius niger*

A colony was observed in a garden in Tórshavn (Gunnar Mohr, Sundsvegur) for three years around a rhododendron plant from 1996 to 1998. In the

summer the ants entered the basement of the property. In 1998 the colony was eradicated using ant poison from grocery shops.

A colony was introduced in soil attached to an apple tree that had been imported from overseas in the spring of 1999 in Tórshavn. The apple tree was planted in a greenhouse close to the main residence and in October 1999 ants were seen in the basement of the home. The colony disappeared without intervention.

A small colony of these ants was discovered on 15 August 2004 in a large pot plant with a tree imported from Denmark. This colony was eradicated by Sissal Kristiansen but the details are unknown.

A colony was discovered in the storage room of an office building in Tórshavn. Four individuals were collected between 23 March and 28 March 2004. The colony disappeared without any intervention.

In 2008 a small colony was discovered in the plant nursery (Skógrøkt Landsins) in Tórshavn. The colony was eradicated with poison (Tróndur Gilli Leivsson *pers. comm.*).

Two ants were collected in a caravan on 6 April 2010. The caravan had been purchased in Denmark in 2008. Any actions are unknown, and no more ants have been found since.

Three ants were discovered on 23 May 2019 on a tray with strawberries imported from Denmark in Oyrabakki, Eysturoy. No further action was needed and no more ants were found later.

Pharaoh ant *Monomorium pharaonis*

A house in Tórshavn was found to be infested with Pharaoh ants in 2003. This house is frequently used by missionaries travelling abroad. The ants were eradicated using poison (Vinjard-Magnussen *pers. comm.*).

A Danish navy vessel arrived in Tórshavn carrying an infestation of Pharaoh ant, Dorete Bloch, with samples collected on 13 November 2007. No further action was taken, and the ship left port in the Faroes shortly after.

Camponotus fallax

One ant was collected at a playground in Tórshavn on 7 August 2017. Subsequent searches failed to find any more individuals. No treatments were conducted, and the incursion presumably died naturally.

Ghost ant *Tapinoma melanocephalum*

A colony was discovered on a fishing vessel in use as a hotel in Oyri, Eysturoy by visitors from Bulgaria in 2017. This colony was eradicated with bait poison in September 2017.

Red wood ant *Formica rufa*

One dead ant was discovered in a bathroom on 3 June 2018 in Fuglafjørður, Eysturoy. Subsequent searches failed to find any more individuals. No treatments were conducted, and the incursion presumably died naturally.

Tapinoma ibericum

Four individual ants, two alive and two dead, were discovered in Tórshavn on 18 June 2019 in a plastic tray of nectarines from Aljaraque in Spain. The specimens were identified as belonging to the species group *Tapinoma nigerrimum* complex, and a linear discriminant analysis using 14 morphological characteristics and the digital supplementary data from Seifert et al. (2017) determined they were *Tapinoma ibericum* ($p = 0.9985$). No colony was ever found and no further action was taken.

Discussion

We are unaware of any detections of ants prior to 1996 on the Faroes, and we are also unaware of any ants currently alive. Most ($n = 10$) of the thirteen discoveries of ants since 1996 have been associated with human activity such as travel or import of materials. Considering the distance to nearest land (Shetland) is 285 km, it is very unlikely that any ants have reached the Faroes unaided by human transport. These incursions have occurred via imported trees, plants, and soil ($n = 4$) as well as products from Denmark and Spain ($n = 2$).

Multiple apparently established incursions did not receive management action, and they disappeared naturally. This suggests that the climate of the Faroe Islands with high rainfall (average 1289 mm/year) and limited variation in average annual temperature (6.8 ± 2.0 °C) (Dansk Meteorologisk Institut 2020), may not be a suitable habitat for these species. Other detections were seemingly just a few individuals infesting transported goods (i.e. the fruit trays). But the colony of Black garden ant *Lasius niger* discovered in 1996 evidently survived until 1998. Although it was a relatively small colony it indicates that the species can potentially survive in the Faroe Islands. So far there are no indications that any ant colonies that managed to persist for any time on the Faroe Islands have been able to initiate new colonies.

Only the species *Lasius niger* have been discovered surviving in the wild. The other species with confirmed colonies were within human structures: *Monomorium pharaonis* in a home and on a boat, and *Tapinoma melanocephalum* on a fishing vessel, consistent with the idea that the climate of the Faroe Islands is not suitable for most species. However, given that climate change is projected to increase the area suitable for habitation for most temperate ant species (Bertelsmeier et al. 2016) it is likely that in the future more ant species will be able to establish on the Faroe Islands, including away from human structures.

Ants are well known to be easily transported in goods, yet there is still no control of the import of pot plants, trees with soil, sods, fruit, vegetables and other perishables etc to prevent the accidental arrival of exotic species to the Faroe Islands. Notably five of the 13 detections occurred in the past 5 years, indicating that incursion pressure is increasing. We anticipate that

ant incursions to the Faroe Islands will increase with increasing human commerce, and that the ability for some species to establish viable colonies will also increase.

Acknowledgements

We thank the multiple people that identified the collected ants. Sunnuva Gulklett and Marita Gulklett improved the manuscript, and Katrin Haraldsdóttir Jensen for proofreading. And finally thanks to the reviewers who also aided in clarification of certain points and generally in improving the manuscript.

References

Bertelsmeier C, Blight O, Courchamp F (2016) Invasions of ants (Hymenoptera: Formicidae) in light of global climate change. *Myrmecological News* 22: 25–42

Collingwood CA (1979) The Formicidae (Hymenoptera) of Fennoscandia and Denmark. *Fauna Entomologica Scandinavica* 8: 1–174. http://antbase.org/ants/publications/6175/6175.pdf

Dansk Meteorologisk Institut (2020) http://www.dmi.dk (accessed 25 September 2020)

Hammer S, Jensen J-K (2019) The introduction of two species of social wasps (Hymenoptera, Vespidae) to the Faroese Islands. *BioInvasions Records* 8: 558–567, https://doi.org/10.3391/bir.2019.8.3.11

Kryger IP, Schmiedeknecht O (1938) Hymenoptera in The Zoology of the Faroes. Jensen AS, Lundbeck W, Mortensen T (eds), Andr. Fred. Høst & Søn, Copenhagen, Denmark, 108 pp

Jensen J-K, Madsen HB (2018) Opdatering af humlebiernes udbredelse på Færøerne (Hymenoptera, Apoidea, Apiformes). *Entomologiske Meddelelser* 86: 51–56

Jensen J-K, Hansen JF, Nolsø Á (2014) Seven species of land-snails (Gastropoda) new to the Faroe Islands / Fyrsta staðfestingin av sjey landsniglasløgum (Gastropoda) í Føroyum. *Fróðskaparrit* 61: 190–209, https://doi.org/10.18602/fsj.v0i61.20

Seifert B (2018) The Ants of Central and North Europe. Lutra, 408 pp

Seifert B, D'Eustacchio D, Kaufmann B, Centorame M, Lorite P, Modica MV (2017) Four species within the supercolonial ants of the *Tapinoma nigerrimum* complex revealed by integrative taxonomy (Hymenoptera: Formicidae), *Myrmecological News* 24: 123–144, https://doi.org/10.25849/myrmecol.news_024:123

Statistics Faroe Islands (2020) http://www.hagstova.fo/en (accessed 25 September 2020)