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Hygrocybe ingrata, Dingy Waxcap

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Taxonomy

Kingdom	Phylum	Class	Order	Family
Fungi	Basidiomycota	Agaricomycetes	Agaricales	Hygrophoraceae

Taxon Name: *Hygrocybe ingrata* J.P.Jensen & F.H.Møller

Common Name(s):

- English: Dingy Waxcap
- French: Hygrophore à odeur désagréable

Taxonomic Notes:

According to recent molecular research the species belongs to the genus *Neohygrocybe* and the correct name is in that case *Neohygrocybe ingrata* (J.L.Jensen & F.H.Møller) Herink (Lodge *et al*. 2014).

Assessment Information

Red List Category & Criteria: Vulnerable A2c+3c+4c ver 3.1

Year Published: 2015

Date Assessed: February 4, 2015

Justification:

Hygrocybe ingrata is a rather large, conspicuous agaric with a yellow-brown to pale brown, smooth pileus of 2-6 cm, easy to recognize on the nitrous smell in combination with a reddish coloration of the exposed context. According to present knowledge it is restricted to Europe, where it is widespread, but rare to very rare everywhere (Candusso 1997, Boertmann 2010). This waxcap is one of the best indicators of species-rich semi-natural grasslands (so called 'waxcap grasslands') which were, for a long time, managed in a traditional way (Jordal 1997, Adamcik and Kautmanova 2005, Arnolds 2015). These habitats are dependent on moderate grazing intensity and/or hand mowing without the use of artificial fertilizers, dung and pesticides. They are rapidly decreasing, together with their characteristic mycoflora, due to changes in land use: agricultural intensification, decline of traditional farming practice and abandoning of low productive grasslands.

Hygrocybe ingrata is decreasing in all areas where it occurs and included in national Red Lists of 13 European countries. Habitat loss and decline of quality of habitat have exceeded 30% over the last 50 years (estimated three generations; Dahlberg and Mueller (2011). The decline in population size over this time has probably been higher. The decline in habitat is expected to continue even more rapidly over the next 50 years. The present population size is estimated to exceed the threshold for Near Threatened for criterion C. Hence, *H. ingrata* is assessed as Vulnerable, VU, because of a reduction in population size of more than 30% over the last 50 years, a decline suspected to continue and caused by habitat loss and degradation. This meets the thresholds for VU A2c+3c+4c.

Geographic Range

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Range Description:

This species is mainly confined to temperate Europe. The eastern boundary of its distribution is less clear because of lack of data.

Country Occurrence:

Native: Austria; Czech Republic; Denmark; Faroe Islands; Finland; France; Germany; Ireland; Netherlands; Norway; Poland; Slovakia; Slovenia; Spain (Spain (mainland)); Sweden; Switzerland; United Kingdom

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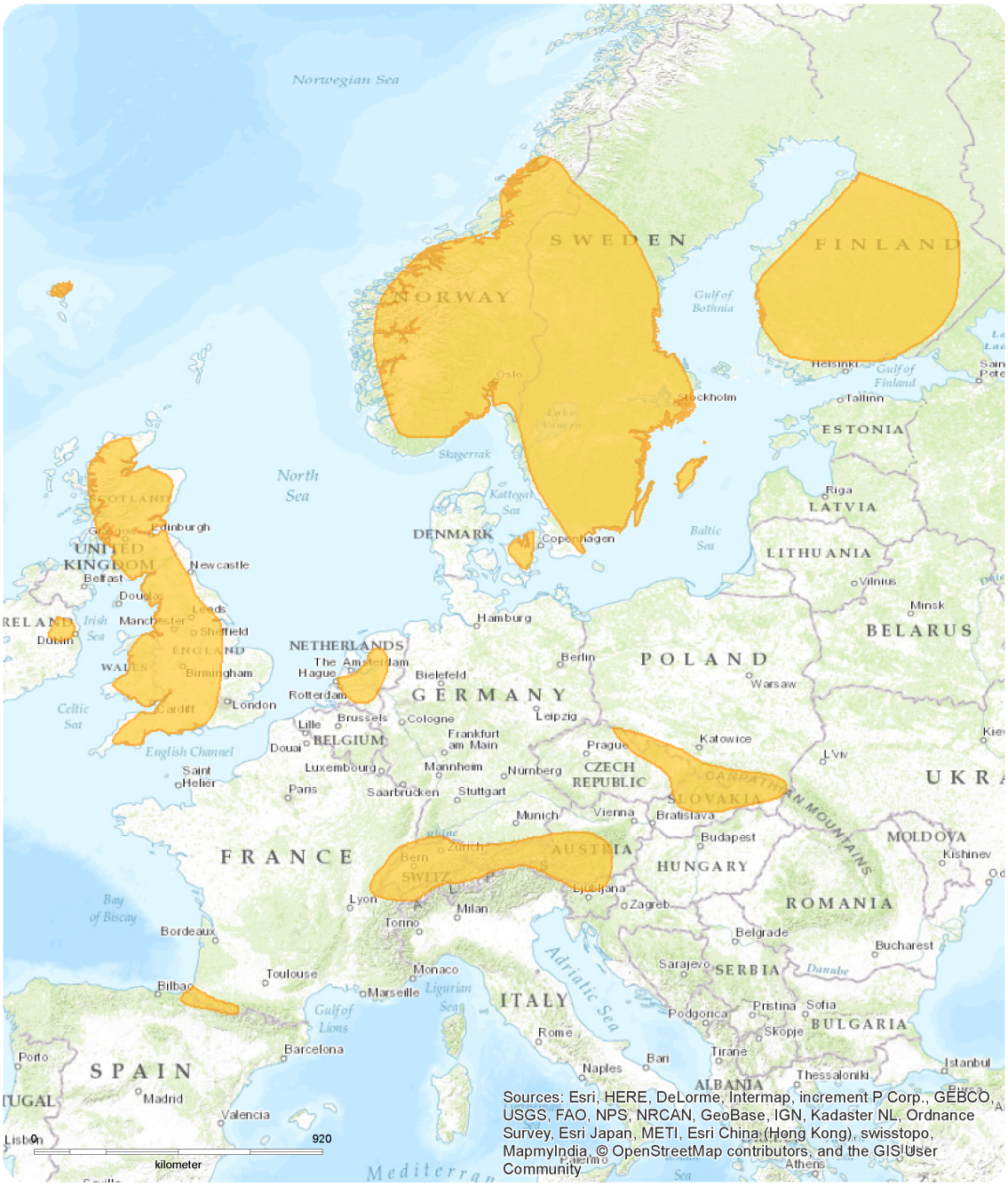
Distribution Map



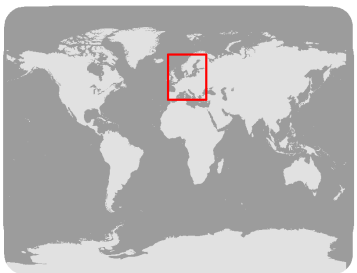
Hygrocybe ingrata

NE DD LC NT **VU** VULNERABLE EN CR EW EX

Range

Extant (resident)

Compiled by:
International Union for the Conservation of Nature



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

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Population

The population size difficult to estimate but estimated to exceed the thresholds for a threatened or Near Threatened category. However, populations are decreasing in all known countries of occurrence. This decrease is supposed to be at least 30% over 30 years (past, future and ongoing) but may in fact be as high as 50% over three generations (50 years; e.g., 1965-2015) and even higher over longer time-frames.

Current Population Trend: Decreasing

Habitat and Ecology **(see Appendix for additional information)**

Hygrocybe ingrata is confined to ancient, semi-natural, herb-rich grasslands, mostly on calcareous or base-rich soils with low availability of nitrogen and phosphorus. Until recently this fungus was considered to be saprotrophic but recent research have shown that at least some, and probably all, *Hygrocybe* species have some kind mutualistic associations with vascular plants (Kuyper 2015). *H. ingrata* is a representative of a very characteristic fungus community with a large diversity of specialized taxonomic groups (*Hygrocybe* spp., *Entoloma* spp, *Dermoloma* spp., Clavaroid fungi, Geoglossaceae and many other fungi) that are strictly dependent on habitats with low vegetation and limited availability of phosphorus and nitrogen due to a long continuity of grazing and/or mowing (Mc Hugh *et al*. 2001, Adamcik and Kautmanova 2005, Arnolds 2015). Addition of fertilizers immediately changes soil conditions and vegetation cover in a way that is detrimental for the fungus community (Arnolds 1989, 2015).

Systems: Terrestrial

Use and Trade

Might be edible.

Threats **(see Appendix for additional information)**

Like other species dependent on semi-natural grasslands, *Hygrocybe ingrata* is threatened in the first place by the loss of habitat due to decreasing small scale farming. The main reasons for the decline of *H. ingrata* and other grassland fungi are increase of nitrogen and phosphorus content of the soil by the application of fertilizers and organic dung; soil disturbance by ploughing and successively reseeding of high productive grasslands and abandoning or afforestation of low productive grasslands.

According to NATURA 2000 reports, grassland habitats in Europe are steadily decreasing, mainly due to abandonment or change in land use (Calaciura and Spinelli 2008). According to the Food and Agriculture Organization of the United Nations (FAO), the area of grasslands in the EU declined by 12.8% from 1990 to 2003 (Food and Agricultural Organisation of the United Nations 2006: FAO Statistical Yearbook – FAOSTAT). Approximately 60% of newly afforested areas in the EU were formerly used as permanent or seasonal grazing land or for hay-production in natural meadows.

In addition the habitat quality of the remaining semi-natural grasslands is declining in many areas by inappropriate management. More than 75% of the grasslands habitats in EU are in an unfavourable conservation status, according to draft data provided by Member States under Article 17 of the Habitats

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Directive. Lack of grazing or mowing leads to the development of a tall and dense sward that restricts sporocarp production, although it is not yet clear if this affects also the mycelia under the ground. Lack of necessary management is also a problem in some nature reserves (see Conservation Actions). In densely populated areas nitrogen deposition is an additional threat to this group of fungi (Arnolds 2015).

In urban and suburban environments, the application of lawn fertilizers, fungicides and moss killers can also affect the species (Mitchell 2000).

Hygrocybe ingrata is included in national Red Lists of 13 European countries. The species is regarded as (critically) endangered in Croatia, Czech Republic, Denmark, Finland, France, Germany, Lithuania, Poland and Switzerland.

Conservation Actions **(see Appendix for additional information)**

Site protection and management of habitats are important conservation actions for the benefit of *Hygrocybe ingrata* and numerous other fungi with comparable ecological demands. Only a small proportion of the sites with this species is protected at the moment. Some grasslands with high species diversity and conservation value (including grassland fungi such as *H. ingrata*) are situated within national parks or nature reserves, but also in these areas the management is not always appropriate to maintain the mycological richness. Continuation of traditional management by grazing or mowing is necessary and demands careful planning (Boertmann 2010, Arnolds 2015).

Credits

Assessor(s): Kautmanova, I., Knutsson, T., Krikorev, M., Læssøe, T. & Senn-Irlet, B.

Reviewer(s): Dahlberg, A.

Contributor(s): Arnolds, E.

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External Resources

For Images and External Links to Additional Information, please see the Red List website.

Appendix

Habitats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Habitat	Season	Suitability	Major Importance?
4. Grassland -> 4.4. Grassland - Temperate	Resident	Suitable	Yes

Threats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.1. Shifting agriculture	Ongoing	Majority (50-90%)	Rapid declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.3. Agro-industry grazing, ranching or farming	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.4. Scale Unknown/Unrecorded	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.1. Nutrient loads	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.3. Herbicides and pesticides	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		

Conservation Actions in Place

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Actions in Place
In-Place Land/Water Protection and Management
Occur in at least one PA: Yes

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Conservation Actions Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection
2. Land/water management -> 2.1. Site/area management
2. Land/water management -> 2.3. Habitat & natural process restoration
6. Livelihood, economic & other incentives -> 6.4. Conservation payments

Research Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Research Needed
1. Research -> 1.2. Population size, distribution & trends
3. Monitoring -> 3.4. Habitat trends

Additional Data Fields

Distribution
Continuing decline in number of locations: Yes
Population
Number of mature individuals: 20000-30000
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 17

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