

The IUCN Red List of Threatened Species™ ISSN 2307-8235 (online) IUCN 2019: T147321990A147999041 Scope: Global Language: English

# Hygrocybe splendidissima, Splendid Waxcap





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**Citation:** Jordal, J. 2019. *Hygrocybe splendidissima*. The IUCN Red List of Threatened Species 2019: e.T147321990A147999041. <u>http://dx.doi.org/10.2305/IUCN.UK.2019-</u> <u>2.RLTS.T147321990A147999041.en</u>

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#### Taxonomy

Kingdom	Phylum	Class	Order	Family
Fungi	Basidiomycota	Agaricomycetes	Agaricales	Hygrophoraceae

Taxon Name: Hygrocybe splendidissima (P.D. Orton) M.M. Moser

#### Synonym(s):

• Hygrophorus splendidissimus P.D. Orton

#### Common Name(s):

• English: Splendid Waxcap

#### Taxonomic Source(s):

Index Fungorum Partnership. 2019. Index Fungorum. Available at: http://www.indexfungorum.org.

#### **Taxonomic Notes:**

*Hygrocybe splendidissima* belongs in *Hygrocybe s.str.* close to *H. coccinea* and *H. punicea*, based on molecular methods (Lodge *et al.* 2013). The type is from England. It can be confused with *H. coccinea*, but has e.g. more or less free lamellae. The taxonomic status of GBIF occurrences in the west coast of USA is uncertain; this could be another taxon and will not be further treated here.

#### **Assessment Information**

Red List Category & Criteria:	Vulnerable A2c+3c+4c <u>ver 3.1</u>			
Year Published:	2019			
Date Assessed:	March 26, 2019			

#### Justification:

*Hygrocybe splendidissima* is a species of seminatural grassland in Europe. The largest populations are found in lowlands near the coasts in Northern Europe. The habitat is strongly declining due to changing agricultural practices, development projects and pollution. We assume a total habitat loss of at least 30% over the last 50 years (approximately three generations: one generation is assumed to be about 17 years). Habitat quality has also become impaired and the decline in population size over this time could be even higher. This decline in habitat is ongoing and expected to continue over the next 50 years. GBIF lists more than 2,600 occurrences. The species is assumed to have a population of more than 20,000 mature individuals. At a global scale the population decline is assumed to be on average 30-50% in 50 years (past, present and future). The species meets the threshold for VU (A2c+3c+4c).

## **Geographic Range**

#### **Range Description:**

The largest populations are in NW Europe (especially UK, Germany, Sweden, Denmark, Norway) and with scattered occurrences in the rest of western and central Europe. Further known from France, Belgium, Netherlands, Germany, Poland, Switzerland, Austria, Czechia, Slovakia, etc. The absence from

Finland and most of eastern Europe, and the higher frequency in western Norway, southern Sweden, Denmark, Germany and UK, suggest a preference for coastal distribution which could be caused by frost intolerance. The eastern boundary of distribution is less clear due to lack of data. Confusion with *H. coccinea* and other relatives in some countries can not be excluded.

#### **Country Occurrence:**

**Native:** Austria; Belgium; Croatia; Czechia; Denmark; France; Germany; Ireland; Italy; Netherlands; Norway; Poland; Slovakia; Slovenia; Sweden; Switzerland; United Kingdom

## **Distribution Map**

Hygrocybe splendidissima



#### Range

Extant (resident)

Compiled by: IUCN





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## Population

GBIF (2019) lists *ca* 2,600 occurrences from Europe. The total population probably exceeds 20,000 mature individuals but is decreasing in all known countries of occurrence, caused by disappearance of small scale farming and traditional ways of grassland management. Griffith *et al.* (2013) estimated a habitat loss of 90% over the last 75 years for the CHEG-fungi (grassland fungi of the groups Clavariaceae, *Hygrocybe s.l., Entoloma* and Geoglossaceae) as a whole in Western Europe (i.e. loss in seminatural grasslands, based on available information). According to the Food and Agriculture Organization of the United Nations (FAO 2006), the area of grasslands in the EU declined by 12.8% over 13 years (1990-2003). The habitat quality of seminatural grasslands is also declining, strengthening the population decline. More than 75% of the grassland habitats are in an unfavourable conservation status (http://ec.europa.eu/environment/nature/knowledge/ rep\_habitats/index\_en.htm#csa). We assume a total habitat loss of 30-50% over the last 50 years. In combination with reduction in habitat quality, this is conservatively assumed to equate to a population loss of 30-50% over the last 50 years (three generations). This trend is expected to continue in the future.

Current Population Trend: Decreasing

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

*Hygrocybe splendidissima* is an indicator of mycologically rich but nutrient-poor, semi-natural grassland (a member of the waxcap grassland assemblage), often on acid soil. This habitat, which may be of low conservation concern for its plant and animal diversity, is rapidly disappearing due to changes in land use (see Threats). In Norway, it is most often found in lowland/coastal habitats, e.g. typical along the western coast of Norway. In other countries, it is frequently seen in mountainous habitats. In Norway, most localities are seminatural grasslands or grassy/mossy spots in coastal *Calluna* heath (N=462; 91.6% in seminatural grasslands, only 5.3% in forests; Jordal *et al.* 2016). A similar pattern of high preference for seminatural grassland is seen in other countries. Waxcaps are currently regarded as forming a biotrophic relationship with plants but the details remain unclear (Halbwachs *et al.* 2018). The fruit bodies are short-lived (weeks), but the mycelium is suspected to be long-lived; >50-100 years.

Systems: Terrestrial

## **Use and Trade**

This is an edible species, and is collected and consumed locally in some areas.

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

Habitat destruction and abandoning are the main threats to seminatural grasslands. The most important process is probably withdrawing due to ceased grazing/mowing of old seminatural grasslands as part of intensification of agriculture or abandonment of area. Further modern cultivation methods such as use of fertilizers, pesticides and ploughing. Also in some places changed land use with the construction of roads, industrial areas, settlements etc. Decline is expected to continue, as the areas of seminatural grasslands are of little economic importance in modern agriculture. Most waxcap grasslands are among types redlisted as VU, EN or CR in the EU red list of habitats (Jansen *et al.* 2016). The quality of habitats is also decreasing. 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 Directive.

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

Site protection and management of habitats are very important conservation actions. The habitats should be protected against destruction due to intensification of agriculture or development plans. The maintaining of seminatural grasslands demands yearly grazing or mowing. If grazing by heavy animals destroys part of the soil, light animals like sheep should be recommended. Habitat conservation by governmental support to traditional agricultural practices is most important, this exists in many countries to maintain extensive agricultural areas, and should be extended to larger areas than today. The species is included in a Swedish action plan also comprising two other grassland species (Jordal 2011). It is legally protected in Poland.

Further ecological research is needed to clarify the nutrient strategy of waxcaps. Management plans are needed. Habitat trends should be monitored.

## Credits

Assessor(s): Jordal, J.

**Reviewer(s):** Mueller, G.M. & Dahlberg, A.

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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	-	Suitable	-

#### 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	-	-	-
1. Residential & commercial development -> 1.2. Commercial & industrial areas	Ongoing	-	-	-
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.3. Agro-industry farming	Ongoing	Majority (50- 90%)	Very rapid declines	High impact: 8
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.3. Agro-industry grazing, ranching or farming	Ongoing	-	-	-
7. Natural system modifications -> 7.3. Other ecosystem modifications	Ongoing	-	-	-
9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.1. Nutrient loads	Ongoing	-	-	-
9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.3. Herbicides and pesticides	Ongoing	-	-	-

## **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	
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
- 1. Research -> 1.3. Life history & ecology
- 2. Conservation Planning -> 2.2. Area-based Management Plan
- 3. Monitoring -> 3.1. Population trends

## **Additional Data Fields**

#### Distribution

Lower elevation limit (m): 0

Upper elevation limit (m): 2350

#### Habitats and Ecology

Continuing decline in area, extent and/or quality of habitat: Yes

Generation Length (years): 17

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