Mustela putorius

Scientific Name: Mustela putorius
Species Authority: Linnaeus, 1758
Regional Assessments: Mediterranean, Europe
Common Name(s): English – Western Polecat, European Polecat; French – Putois d’Europe; Spanish – Turón

Taxonomic Notes: Some authors (e.g., Pocock 1936, Ellerman and Morrison-Scott 1951) considered that Mustela putorius and Steppe Polecat M. eversmanii are conspecific, but most recognised these two taxa as closely related but distinct species (e.g., Heptner et al. 1967, Abramov 2000, Wozencraft 2005). Recent molecular studies support this point of view (Davison et al. 1999, Kurose et al. 2000, Koepfli et al. 2008). Mustela putorius is the probable ancestor of Domestic Ferret M. furo; this latter is often known as M. p. furo. The origin of the North African population allied to this species has been debated. Some authors contend that it is a feral population of Domestic Ferret, although fossil remains found in 2001 and ascribed to M. putorius suggest that the species might be native to North Africa (see Gippoliti 2011, Ahmim 2013, Griffiths and Cuzin 2013 and references therein). Much information published under the name M. putorius refers specifically to M. furo; for example, only this latter has been introduced to New Zealand (Clapperton 2001).

Assessment Information
Red List Category & Criteria: Least Concern
Year Published: 2016
Date Assessed: 2016-03-05
Reviewer(s): Pacifici, M.
### Geographic Range

**Range Description:**
Western Polecat is widespread in the western Palaearctic east to the Ural Mountains in the Russian Federation; it is absent from Ireland, northern Scandinavia, much of the Balkans, much of the eastern Adriatic coast, and occurs in Greece only marginally, in the north. It is widespread in France, less so in the south-west and south-east (Berzins and Ruette 2014, Calenge et al. 2015), in mainland Spain (Grupo de carnívoros terrestres de la SECEM 2001, Virgós 2007), in Romania (A.D. Sandor pers. comm. 2015) and in many other countries of its range. Since the year 2000 many distribution gaps in the Swiss Midlands and Jura have been filled and in the Grisons the species has expanded its range in the Vorderhein Valley to almost the Oberalp Pass, and in the Vorderhein Valley to the Via Mala area (Infofauna 2016).

There is some evidence of northern range expansion recently (references cited in Zabala et al. 2005, T. Maran pers. comm. 2016). The north-eastern border of regular occurrence runs approximately to Arkhangesk city, Syktyvkar city and Perm city (Russia); north and east of this line, it is very rare, being replaced over the River Kama by its ecological analogue, Siberian Weasel *M. sibirica*; wild hybrids between the two, from west of the Kama, are known (D. Skumatov pers. comm. 2015). It has recently been recorded at Cherdyn' (Perm province) at about 60°30'N, 57°E (S. Glebov per D. Skumatov pers. comm. 2016). Western Polecat inhabits the west slope of the Middle and South Ursals; recent occurrence east of the Ursals (up to Kurgan city) is possible, but not proven. The species inhabits the forest-steppe zone from the southern Ursals to the River Volga, River Don and the Azov Sea. To the south occurs Steppe Polecat *M. eversmannii*; hybridisation occurs (Ternovskii and Ternovskaya 1994).

Populations of disputed taxonomic identity that are either part of, or close to, this species are found in North Africa, in the Moroccan Rif Mountains (Griffiths and Cuzin 2013) and in adjacent Algeria (Ahmim 2013). The feral range of the Domestic Ferret *Mustela furo* includes some areas within Western Polecat's native range (e.g. Britain) and some outside it such as New Zealand (Claperton 2001).

In Europe, Western Polecat has been recorded from sea-level up to at least 1,600 m a.s.l. in Spain (Virgós 2007) and up to 1,400 m for the French Pyrenees (C. Arthur pers. comm. 2016) and 1,500 m for the French Alps (P. Rigaux pers. comm. 2016); previous statements of occurrence up to 2,000 m a.s.l. in France remain to be corroborated, although in Switzerland there are recent records at altitudes probably above 1900 a.s.l. (P. Dollinger pers. comm. 2016). The African populations occur from sea level to 2,400 m (Griffiths and Cuzin 2013).

### Countries occurrence:
- Algeria
- Andorra
- Austria
- Belarus
- Belgium
- Bosnia and Herzegovina
- Bulgaria
- Croatia
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Gibraltar
- Greece
- Hungary
- Italy
- Latvia
- Liechtenstein
- Lithuania
- Luxembourg
- Macedonia
- Malta
- Morocco
- Netherlands
- Norway
- Poland
- Portugal
- Romania
- Russia
- San Marino
- Slovakia
- Slovenia
- Spain
- Sweden
- Switzerland
- Turkey
- Ukraine
- United Kingdom

### Previously published Red List assessments:
- 1996 – Lower Risk/least concern (LR/lc)
Lithuania; Luxembourg; Macedonia, the former Yugoslav Republic of; Moldova; Montenegro; Netherlands; Norway; Poland; Portugal; Romania; Russian Federation; Serbia (Serbia); Slovakia; Slovenia; Spain; Sweden; Switzerland; Turkey; Ukraine; United Kingdom

**Present - origin uncertain:**
Algeria; Morocco

### Additional data:
- **Continuing decline in area of occupancy (AOO):** Unknown
- **Extremely fluctuations in area of occupancy (AOO):** No
- **Continuing decline in extent of occurrence (EOO):** Unknown
- **Extremely fluctuations in extent of occurrence (EOO):** No
- **Continuing decline in number of locations:** Unknown
- **Extremely fluctuations in the number of locations:** No
- **Upper elevation limit (metres):** 2400

### Range Map:

### Population:

**Population:**
In general the Western Polecat population is believed to be large and relatively stable in the eastern half to three-quarters of its range. Considerations of population trend must take into account that it loses more than half its population from autumn to spring annually (D. Skumatov pers. comm. 2016). It is common in forested areas of European Russia, where the population density is about one individual per km² in winter in the southern taiga zone from the Belarus border in the west to Izhevsk city in the east (D. Skumatov pers. comm. 2015). There is no precise information on population trend in the country. It is not a focus of the state hunting monitoring; information is collected only incidentally to the main species for monitoring and the hunting bag is not recorded (D. Skumatov pers. comm. 2015). However, over its large range in the Russian Federation, which comprises a large proportion of the species' entire global range, annual official monitoring of wildlife by snow-tracking suggests that it is relatively stable, perhaps with some decline (but much less than 20%) since 2000 (A. Saveljev pers. comm. 2015, D. Skumatov pers. comm. 2015). Based on hunters' opinions, the population is stable or increasing in Estonia (T. Maran pers. comm. 2015). In Latvia the population is widespread and healthy, although the species is possibly being displaced from some areas around human settlement by Beech Marten *Martes foina* (J. Ozolins pers. comm. 2015). By contrast, in Belarus, the species is believed to be in decline, and recent surveys in Naliboki Forest and its rural surroundings found only 4.7-8.3 individuals per 100 km² (Sidorovich 2011, V.E. Sidorovich pers. comm. 2016).
Similarly, further south, in Romania, 2007/2008 – 2011/2012 hunting bag statistics and 2005–2013 population estimates (source: Ministry of Environment and Climate Change, www.mmediu.ro, accessed on 12 October 2014), for which there is no previous comparison period, converge in suggesting a 22–25% decline during the 14 years to 2013; notably, the hunting quota did not decline during 2007/2008 – 2011/2012, so the drop in number taken was not driven by a change in regulation (A.D. Sandor pers. comm. 2015). Although the Polecat is considered by the public (game-keepers, scientists and lay public) to be the most common mustelid in Romania, a 2012–2014 transect survey for tracks focused on the centre and west of the country recorded it in only 54.25% of transects comprising apparently suitable habitat (compared with 65.57% for Pine Marten _Martes martes_, 76.12% for Wild Cat _Felis sylvestris_ and 91.50% for Eurasian Otter _Lutra lutra_) (A.D. Sandor pers. comm. 2015).

In Western Europe, the species is scarce, typically occurring at densities of about 1 individual per 10 km², and rarely exceeding 5–10 individuals per 10 km², even in optimal habitat. In the United Kingdom numbers are now increasing, following a major persecution-driven decline from the 1800s to 1920s (Davison et al. 1999), although there is a significant degree of introgression with Domestic Ferret _M. furo_ (Costa et al. 2013). In France the species' conservation status was assessed in 2007 (2002–2006) and in 2013 (2007–2012): it was 'Unfavourable – Inadequate' in 2013 versus 'Unknown' in 2007 in two biogeographic regions (Alpine and Mediterranean), but the improvement of knowledge allowed assessment as 'Favourable' in the two other regions (Atlantic and Continental). Its range dropped from 11,263 to 3,300 km² in the Alpine region and from 37,199 to 15,600 km² in the Mediterranean region between 2007 and 2013; the total French distribution area was 465,680 km² in 2007 but only 334,300 in 2013 (Bensettiti and Puisseau 2015). A modelling approach intending to account for the search effort predicted a probable decrease in Polecat numbers in 30% of the French agricultural regions whereas an increase was probable in 20% of them (Calenge et al. 2016, in press). The southern French population has presumably decreased in line with this range contraction although no precise number exist. In Switzerland, a massive decline took place until the late 1970s but since then the population has stabilised and even, locally (in the Grisons) increased (Hausser 1995, Anderegg 2004); road-kill statistics show a huge, sustained increase in reported Polecats between 2009 and 2014 (from 2 to 153), an increase mirrored in such observation of few other species, and thus more likely to reflect an increasing Polecat population than changed reporting behaviour (P. Dollingerpers. comm. 2016).

In Spain it seems to live at generally low densities (J. Herrero pers. comm. 2015). Widespread declines are believed to be occurring in the Mediterranean climatic zones of Spain and Portugal, probably associated with use of pesticides but also reflecting the reduction of the European Rabbit _Oryctolagus cuniculus_ population, but no quantitative data exist (E.J. Virgós pers. comm. 2015; I. Zuberogoitia pers. comm. 2015); the species is very much in the ‘attention-shadow’ of the larger carnivores. Intensive control programmes for American Mink _Neovison vison_ in northern Spain reveal that the Polecat is now very scarce there (I. Zuberogoitia pers. comm. 2015).

In Austria, the hunting bag of polecats (Western and Steppe combined, the vast majority being the former) increased from 6,000 in 1955 to almost 14,000 in 1968 and then decreased back to 6,000 in 2003 (Reimoser et al. 2006). Official hunting bag statistics for 1983–2014 (provided by STATCube [Statistische Datenbank von Statistik Austria] per A Kranz pers. comm. 2016) show strong indication of periodical cycling (approximately 10 years between peaks, with troughs about three-quarters of the preceding peaks) but an obvious general downward trend resulting in an approximate halving of the hunting bag in the 31-year period. These data are consistent with ongoing population decline, but the role of variation in hunting effort is difficult to untangle, although at least the cycling seems more likely to reflect Polecat population than hunter behaviour. If so, this urges particular care when looking at trends in population (or in surrogates such as road-kills or hunting bags) derived from only a few years' data.

No monitoring or survey have been performed in Italy. The only data on this species's status come from road casualties, but these are not systematically collated. The present conservation status in Italy is thus considered unknown by the National Institute for Nature Protection (ISPRA) (M. Pavanello pers. comm. 2016).

In Germany, there is widespread opinion of decline, originally noted through decreasing hunting bags (A. Schreiber pers. comm. 2015). In Saxony, there was a steep decrease during the late twentieth century (H. Ansorge pers. comm. 2015). The most detailed information comes from Saxony-Anhalt: between 1962–1989 and 2005–2014, the range in this state (total land area: 20,452 km²) dropped by 10,120 km²; and the number of Polecats found victim to road or rail accidents approximately halved between 2006–2007 and 2012, without the implementation of any polecat-specific protection measures on roads or railways, suggesting that the change reflects the local Polecat population density (A. Weber pers. comm. 2015). It is impossible to judge how representative these alarming results are for a wider area, because of the lack comparable case studies from elsewhere. Comparable declines are strongly suspected in at least three other federal states of Germany (Mecklenburg – Western Pomerania, Brandenburg and Thuringia; more or less all eastern federal states with equal agricultural...
The status of the North African populations part of, or allied to, this species is poorly known; the species may now be very rare (Gippoliti 2011, Ahmim 2013, Griffiths and Cuzin 2013).

### Habitat and Ecology

**Habitat and Ecology:**

Over its wide geographic range, Western Polecat is found in a wide variety of habitats (Zabala et al. 2005 and references therein). It occurs widely in lowland woods and in riparian zones, and in rural areas close to farms and villages in the winter; but it also uses wooded steppe, sand dunes, marshes and river valleys, agricultural land, forest edge and mosaic habitats (Birks 1999, Cabral et al. 2005). In the Russian Federation, which comprises the majority of its global range, waterside habitats are very important for the species (D. Skumatov pers. comm. 2016). In Spain, it lives in a very wide range of environments, from Atlantic to Mediterranean habitats (Virgos 2007, J. Herrero pers. comm. 2015) with again an association with water-edge habitats (Zabala et al. 2005). In general, mountainous areas are avoided. In the French Mediterranean region in particular, Polecat records are much less frequent than elsewhere in the country; the species' presence in this region seems linked to the presence of wetlands (S. Ruette and M. Guinot-Ghéstern pers. comm. 2015), as has been found in Italy and Portugal (Rondinini et al. 2006, Mestre et al. 2007).

It feeds on live lagomorphs, rodents (various genera of voles, mice and hamsters), amphibians and other vertebrates, also sometimes on invertebrates and carrion (e.g. Birks 1999). In many Mediterranean areas, it is specialised in the predation of lagomorphs, notably European Rabbit *Oryctolagus cuniculus* (Roger 1991, Santos et al. 2009).

**Systems:**

- Terrestrial

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

Unknown

**Generation Length (years):**

4.5

**Movement patterns:**

Not a Migrant

### Additional data:

- **Continuing decline of mature individuals:** Yes
- **Extreme fluctuations:** Unknown
- **Population severely fragmented:** No
- **Continuing decline in subpopulations:** No
- **Extreme fluctuations in subpopulations:** No
- **All individuals in one subpopulation:** No

<table>
<thead>
<tr>
<th>Current Population Trend</th>
<th>Decreasing</th>
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<td>Subpopulations:</td>
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<td>fragmeneted:</td>
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<tr>
<td>All individuals in one subpopulation:</td>
<td>♦</td>
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### Use and Trade

**Use and Trade:**

Western Polecat is legally hunted in the Russian Federation and in various other countries for its fur. Because of the high variety of shades of hairs and their gradations it is difficult to find two or three hides of the same coloration, and it is impossible to find thirty or fifty similar hides for a jacket – hence Western Polecat furs harvested from the wild can be found on the Russian domestic market only in the form of smaller handicraft products such as hats and caps (N. Dronova and A. Vaisman per R. Melisch pers. comm. 2016). Industrial production use farmed hides from hybrid forms. According to Sergey Stolbov, President of the Russian Fur Union (A. Vaisman per R. Melisch pers. comm. 2016), Western Polecat, as the species is treated by the Red List (pure-bred offspring of individuals taken from the wild), has never been farmed for hide production. Hybrids with Domestic Ferret (i.e. *M. putorius X M. (putorius) furo*) are, however, farmed in Russia at two fur farms (one in Pushkino close to Moscow, one in Tver province) in industrial volumes, producing about 30,000–35,000 hides per year. These are all solely for the Russian domestic market and there are multiple regularly breeding coloured forms of furs: pearl, golden, snowy-white, coal-black, etc. Statements that the species is farmed for fur in the Russian Far East (e.g. Dronova and Shestakov 2005), many thousand kilometres from its natural range, are likely also to refer to the said hybrid form.

The EU-TWIX database and mailing list exchanges which concentrate on information on seized specimen of fauna and flora from the wild hold, as of February 2016, no information relating to this species. (http://www.eutwix.org/; http://www.traffic.org/home/2015/12/3/eu-twix-ten-years-of-
Threats

Major Threat(s):

Population declines in western Europe have generally been attributed to over-hunting and to heavy loss or modification of the species’ preferential habitats of wetlands and hedged farmland (e.g. Roger et al. 1988, Birks & Kitchener 1999, Baghli and Verhagen 2003). Hunting is now likely to be less of a problem than formerly except at a local scale, whereas agrochemicals and introduced carnivores may be widespread and increasing threats (see below).

Wetland destruction has been identified as a cause of decline in Germany and Switzerland (A. Schreiber pers. comm. 2015, P. Dollinger pers. comm. 2015). In areas where the Polecat is associated with wetlands, reduction of these habitats is particularly damaging in autumn and winter, during periods of lower abundance of amphibians (Weber 1989, Lodé 1991, Baghli et al. 2002). In France, the drying of wetlands and the increase of agricultural land more than halved the total wetland area between 1940 and 1990 (Report Claude Bernard 1994). Hedges provide adequate cover for Polecat activity in otherwise open farmland (Birks 2000). Consequently, the wide destruction of hedgerows that occurred in western Europe in the mid and late 20th century is likely to have contributed to the decline of the species. Indeed, despite a slowdown in the uprooting of hedgerows since the 1990s, hedgerow surface area declined by 5% per year in France from 1982 to 1990 (Pointereau 2002).

Reduced prey-base also causes some declines, particularly in Mediterranean areas where European Rabbit Oryctolagus cuniculus forms a large part of the diet (see ‘Habitats and ecology’ section). Mediterranean Rabbit populations have been in steep decline for 25 years because of diseases, such as myxomatosis (Calvete et al. 1997) and rabbit haemorrhagic disease (RHD) (Moreno et al. 2007, Delibes-Mateos et al. 2009), and modification of its habitat and hunting (Calvete et al. 2006). The steep declines in Switzerland up to the 1970s were attributed in part to declining populations of amphibians (P. Dollinger pers. comm. 2015). Declines in other prey species, such as European Hamster Cricetus cricetus and even rats and mice (Muridae) probably contribute to the steep declines in parts of the range such as Saxony-Anhalt, Germany (A. Weber pers. comm. 2015). Such declines are driven by intensive agriculture (high pesticide use, rapid cultivation, choice of crops and the near-complete use of land).

Western Polecat is vulnerable to heavy trapping. It disappeared from most of Britain because of sustained intensive trapping, as a pest of game-birds and small livestock, from the 19th century into the early decades of the 20th (Langley and Yalden 1977). However, it recolonised the country following the near-cessation of this practice (Birks and Kitchener 1999, Birks 2000) and the resurgence of Rabbit populations (Birks 2000).

In western Europe, Western Polecat was formerly widely hunted for sport and fur and persecuted as a pest, but these threats have become less serious. The species is now protected in a number of range states and in such areas, the rates of hunting have greatly reduced. For example, in Switzerland, in each of the years 2009, 2013 and 2014 only a single individual (male) was killed under special license. Cantons issuing the licenses were Zurich, Berne and Argovia (P. Dollinger pers. comm. 2016). In such areas, legal killing cannot be a threat. In France, Western Polecat was classified as ‘pest’ in half of (49) French departments in 1997, 1999 and 2001. But trapping of Polecats has progressively decreased since 1998, and has not been permitted since 2012 (Albaret et al. 2014), except in two areas (totalling around 3,500 km²). However, even before the ban, trapping intensity seemed limited: in 1998, catches were performed in only 8.6% (± 14%) of localities where the species could legally be trapped (Ruette et al. 2004), and only around 6,000 catches by trapping were registered in France in 2011 (Albaret et al. 2014). August 2012 modification of the French legislation about ‘pest’ species meant that the Polecat could not be trapped until July 2015: subsequent legislation (July 2015 to July 2018) does not permit trapping of Polecats except in two areas. However, legal trapping for other mustelid species and non-selective predator control (see Treves and Naughton-Treves, 2005) could represent a threat for the Polecat (S. Ruette and M. Guinot-Ghestem pers. comm. 2015). In particular, trapping campaigns against the American Mink Neovison vison have resulted in many Polecats being killed in confusion (C. Arthur pers. comm. 2016). Hunting Western Polecat with guns remains legally permitted in France. The 2013 national enquiry estimated that fewer than 3,000 Polecats were hunted in 2013 in France (ONCFS-FNC in press).

Hunting, as a perceived pest of wild game, is legal throughout the year in Austria (A. Kranz pers. comm. 2016).

By contrast with much of western Europe, in European Russia the species is still hunted. However, intentional hunting is not intensive because the price per pelt is so cheap: only 30–50% of that of American Mink and 10–20% of that of martens Martes. In the area of best habitat for the species in Russia, the southern forest expanses in the European part, the polecat is hunted intentionally only occasionally, for example as a pest of domestic animals such as chickens (D. Skumatov pers. comm. 2015). Harvest usually occurs as a ‘by-catch’of hunting for American Mink and Pine
Conservation Actions

**Conservation Actions:**

Given the widespread opinion and localised evidence of recent steep declines in continental western Europe, the most important conservation requirement is for research to clarify the range of threats, and, for each, the intensity and geographic spread, to allow the design and implementation of effective conservation measures where they are needed. In particular, it is urgent to undertake, across Europe, research comparable to that in Saxony-Anhalt, Germany, which has indicated recent steep declines there (A. Weber pers. comm. 2015; see ‘Population’ section).

Western Polecat is listed on Appendix III of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Annex V of the EU Council’s Directive on the conservation of natural habitats and of wild fauna and flora (EU Habitats Directive). It is protected in Italy (M. Pavanello pers. comm. 2016) and under Schedule 6 of the Wildlife and Countryside Act (UK) and by the regional Red Data Book on southern border of its Russian area, in Rostovskaya oblast’ (Rostov-na-Donu city) (D. Skumatov pers. comm. 2015); however, in Spain, it is listed in the national Red Data Book as Near Threatened (Virgós 2007). In Switzerland it was categorised as
Vulnerable in 1994; it will shortly be reassessed (P. Dollinger pers. comm. 2016). The species was included in the 'pre-warning list' (analogous to Near Threatened) for Germany in 1998 and was kept therein in the new edition of the German Red List in 2009. This status is a compromise between the various red lists of the many German Bundesländer (provinces), some of which classify the polecat in higher threat categories, while there could still be provinces where the polecat is not included yet at all (A. Schreiber pers. comm. 2015). It is registered in Annex V to DHFF (Directive Habitats-Faune-Flore), France, and therefore benefited from an assessment of its conservation status in 2007 (2002–2006) and in 2013 (2007–2012) (Bensettiti and Puissauve 2015). It receives at least some level of protection in many other range states. In Saxony-Anhalt, Germany, where steep declines have recently been demonstrated, hunting is prohibited for the period 2015-2019 (with possibility of extension) to preserve Polecat numbers. This has prompted intensive study of occurrence, population dynamics, genetic monitoring, and survey of carcases (A. Weber pers. comm. 2016). It occurs in many protected areas across its range.

The decline in Switzerland up to the 1970s was combated by the improvement of habitat by creation of new ponds for amphibians and revitalisation of small rivers (P. Dollinger pers. comm. 2015). In much of continental western Europe it is very important to widen and restore river-banks and wetlands and to accept Eurasian Beaver *Castor fiber* as a promoter of natural habitat development. It is similarly important to restore the edges of woods and hedges and to minimise mowing of fallow agricultural land and of field boundaries. Restocking operations are trying to rebuild some Rabbit populations, particularly in the Mediterranean region (Letty et al. 2006), but methods need to be improved (Calvete et al. 1997, Moreno et al. 2007). These transactions may prove beneficial in maintaining the Polecat (Birks 2000). Conservation of Eurasian Hamster *Cricetus cricetus* is beneficial to the Polecat and warrants wider implementation.

Where either occurs, control of American Mink *Neovison vison* and Raccoon Dog *Nyctereutes procyonoides* important to prevent declines of Western Polecat. Reduced release of Domestic Ferrets *Mustela furo* into the wild would reduce the (apparently rather low) threat from introgression.

The taxonomic and conservation status of the North African populations part of, or allied to, this species is poorly known. They may now be very rare, an issue of concern if they are an autochthonous, potentially somewhat taxonomically distinct, form (Gippoliti 2011, Ahmim 2013, Griffiths and Cuzin 2013). A taxonomic assessment of these populations is a priority and if they are native, they warrant conservation measures.

### Classifications

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<td>3. Shrubland -&gt; 3.4. Shrubland - Temperate <strong>suitability</strong>: Suitable</td>
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<td>4. Grassland -&gt; 4.4. Grassland - Temperate <strong>suitability</strong>: Suitable</td>
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<td>5. Wetlands (inland) -&gt; 5.1. Wetlands (inland) - Permanent Rivers(Streams/Creeks (includes waterfalls) <strong>suitability</strong>: Suitable</td>
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5. Wetlands (inland) - 5.2. Wetlands (inland) - Seasonal/Intermittent/Irregular Rivers/Streams/Creeks

**suitability:** Suitable

5. Wetlands (inland) - 5.3. Wetlands (inland) - Shrub Dominated Wetlands

**suitability:** Suitable

5. Wetlands (inland) - 5.4. Wetlands (inland) - Bogs, Marshes, Swamps, Fens, Peatlands

**suitability:** Suitable

5. Wetlands (inland) - 5.7. Wetlands (inland) - Permanent Freshwater Marshes/Pools (under 8ha)

**suitability:** Suitable

5. Wetlands (inland) - 5.8. Wetlands (inland) - Seasonal/Intermittent Freshwater Marshes/Pools (under 8ha)

**suitability:** Suitable


**suitability:** Suitable


**suitability:** Suitable


**suitability:** Suitable


**suitability:** Suitable

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**Bibliography**


