

= Red @-@ necked grebe =

The red @-@ necked grebe (*Podiceps grisegena*) is a migratory aquatic bird found in the temperate regions of the northern hemisphere . Its wintering habitat is largely restricted to calm waters just beyond the waves around ocean coasts , although some birds may winter on large lakes . Grebes prefer shallow bodies of fresh water such as lakes , marshes or fish @-@ ponds as breeding sites .

The red @-@ necked grebe is a nondescript dusky @-@ grey bird in winter . During the breeding season , it acquires the distinctive red neck plumage , black cap and contrasting pale grey face from which its name was derived . It also has an elaborate courtship display and a variety of loud mating calls . Once paired , it builds a nest from water plants on top of floating vegetation in a shallow lake or bog .

Like all grebes , the Red @-@ necked is a good swimmer , a particularly swift diver , and responds to danger by diving rather than flying . The feet are positioned far back on the body , near the tail , which makes the bird ungainly on land . It dives for fish or picks insects off vegetation ; it also swallows its own feathers , possibly to protect the digestive system . The conservation status of its two subspecies ? *P. g. grisegena* found in Europe and western Asia , and the larger *P. g. holboellii* (formerly Holb?ll grebe) , in North America and eastern Siberia ? is evaluated as Least Concern , and the global population is stable or growing .

= = Taxonomy = =

Grebes are small to medium @-@ large water birds with lobed , rather than webbed , toes . There are several genera , of which the most widespread is *Podiceps* with nine species , one recently extinct . The red @-@ necked grebe 's closest relative is the fish @-@ eating great crested grebe of Europe and western Asia . It is possible that the red @-@ necked grebe originally evolved in North America and later spread to Europe , where a change of diet to include more insects helped to reduce competition with its larger cousin . Fossils of the species dating to the middle Pleistocene have been found in Italy .

The genus name *Podiceps* comes from Latin *podicis* , " vent " or " anus " , and *pes* , " foot " , and is a reference to the placement of a grebe 's legs towards the rear of its body . The species name *grisegena* is from Latin *griseus* (grey) and *gena* (cheek) and refers to the face pattern of the breeding adult .

The red @-@ necked grebe has two subspecies , the nominate subspecies *P. g. grisegena* in Europe and western Asia , and *P. g. holboellii* (Holboell 's grebe , named for Danish explorer of Greenlandic birds Carl Peter Holbøll) in North America and eastern Siberia . The east Asian birds have slightly smaller bills than the American form , although the differences are too small to merit separation as a third subspecies .

= = Description = =

The red @-@ necked grebe is a medium @-@ large grebe , smaller than the great crested grebe of Eurasia , and the western and Clark 's grebes of North America . The adult of the nominate European subspecies is 40 ? 50 cm (16 ? 20 in) long with a 77 ? 85 cm (30 ? 33 in) average wingspan , and weighs 692 ? 925 g (24 @.@ 4 ? 32 @.@ 6 oz) . In breeding plumage , it has a black cap that extends below the eye , very pale grey cheeks and throat , a rusty red neck , dark grey back and flanks , and white underparts . The eyes are dark brown and the long , pointed bill is black with a yellow base .

The winter plumage of the red @-@ necked grebe is duskier than that of other grebes ; its dark grey cap is less defined , and merges into the grey face , and a pale crescent that curves around the rear of the face contrasts with the rest of the head . The front of the neck is whitish or light grey , the hind neck is darker grey , and the yellow of the bill is less obvious than in summer . Although the red @-@ necked grebe is unmistakable in breeding plumage , it is less distinctive in winter and can be

confused with similar species . It is larger than the Slavonian (horned) grebe , with a relatively larger bill and a grey , rather than white face . It is closer in size to the Eurasian great crested grebe , but that species is longer @-@ necked , has a more contrasting head pattern , and always shows white above the eye .

The sexes are similar in appearance , although the male averages heavier than the female . Chicks have a striped head and breast , and older juveniles have a striped face , diffuse blackish cap , pale red neck and extensive yellow on the bill .

The subspecies *P. g. holboellii* is larger than the nominate race at 43 ? 56 cm (17 ? 22 in) length , with a 61 ? 88 cm (24 ? 35 in) wingspan , and a weight of 750 ? 1 @, @ 600 g (26 ? 56 oz) . The plumages are the same as those of the nominate race , although the adult 's bill is more extensively yellow . The difference in size between the sexes is greater than for this subspecies than for *P. g. grisegena* .

The red @-@ necked grebe flies with its long neck extended and its large feet trailing behind the body , which gives it a stretched @-@ out appearance . The relatively small wings are grey with white secondaries , and beat very rapidly . Its small wing area means that the grebe is unable to take off from land , and needs a lengthy run across water to gain the speed needed for take @-@ off . Like all grebes , the red @-@ necked is an expert swimmer ; it uses its feet for propulsion underwater , and steers by rotating its legs , since its tail is too short for this purpose .

This is one of the most vocal grebes during the breeding season , but , like its relatives , it is mainly silent for the rest of the year . It has a loud , wailing or howling display call uooooh , given by a single bird or a pair in duet , by night or during the day , and often from cover . Long sequences of up to 60 consecutive notes may be delivered during singing encounters between rival territorial birds . A great variety of quacking , clucking , hissing , rattling and purring calls are also given , with much individual variation .

= = Distribution and habitat = =

Breeding takes place in shallow freshwater lakes , bays of larger lakes , marshes , and other inland bodies of water , often less than 3 ha (7 @. @ 4 acres) in extent and less than 2 m (6 @. @ 6 ft) deep . The red @-@ necked grebe shows a preference for waters in forested areas or , further north , in shrub tundra , and favours sites with abundant emergent vegetation , such as reedbeds . The best breeding habitat is fish @-@ ponds , which have an abundance of food in addition to meeting the other requirements . The American subspecies is less tied to a high aquatic plant density , and sometimes breeds on quite open lakes .

All populations are migratory and winter mainly at sea , usually in estuaries and bays , but often well offshore where fish are within diving reach near shallow banks or islands . The preferred passage and wintering habitat is water less than 15 m (49 ft) deep with a sand or gravel bottom , scattered rocks and patches of seaweed . During winter , birds typically feed alone and rarely aggregate into flocks , but on migration , concentrations of over 2000 individuals may occur at favoured staging sites . Migration is usually at night , but may occur during the day , especially when over water . This is particularly noticeable in autumn on the Great Lakes , when up to 18 @, @ 000 birds may pass Whitefish Point on Lake Superior ; these are thought to be Canadian breeders heading for the Atlantic Ocean to winter . This easterly route is longer than that to the Pacific , but avoids the Rockies .

The breeding range of the red @-@ necked grebe overlaps with that of the Slavonian grebe , although the latter species tends to be displaced from sites suited to both . The red @-@ necked grebe prefers an inland temperate climate , and is less successful near coasts and in subarctic and warm temperate zones . It is usually a lowland bird , breeding below 100 m (330 ft) , although has nested at up to 1 @, @ 800 m (5 @, @ 900 ft) in Turkey .

The nominate subspecies breeds from southern Sweden and Denmark through central and eastern Europe east to western Siberia , and winters mainly in the North and Baltic Seas , with smaller numbers in the Adriatic , Black Sea , Caspian Sea , Mediterranean and on inland lakes . *P. g. holboellii* breeds in North America in Alaska , western and central Canada , and the northern US east

to Minnesota ; in Asia it nests in eastern Siberia from Kamchatka south to Hokkaido and west to Mongolia . The Asian birds winter at sea from Japan to the East China Sea , and American breeders winter in the Pacific , mainly from southern Alaska to British Columbia (with smaller numbers south to California) , and in the Atlantic from Newfoundland and Labrador to Florida . Some birds remain on the Great Lakes if they are sufficiently ice @-@ free . This species occurs as a rare winter vagrant in Afghanistan , Pakistan and parts of northern and western India .

= = Behaviour = =

= = = Breeding and survival = = =

Red @-@ necked grebes usually nest as isolated pairs with more than 50 m (160 ft) between neighbouring nests , although semi @-@ colonial nesting may occur in suitable sites , where up to 20 pairs each defend a linear territory . Semi @-@ colonial breeding is more likely to occur in prime locations , such as large floating mats of vegetation with no connection to the shoreline . Such sites , safe from most predators and large enough to provide some wind and wave protection , have grebes nesting much closer than shoreline breeders , down to 10 m (33 ft) . Pairs nesting in these colonies produce larger clutches of eggs , which hatch earlier in the season and result in larger broods . The territory is defended with various threat displays , including wing @-@ spreading , hunching , and bill @-@ thrusting ; pairs breeding in colonies are more aggressive , less likely to leave the nest unguarded and show a greater tendency to move out of sight of the colony when not incubating . Breeding is often in loose association with gulls or other colonial water birds .

The monogamous pair forms in April or May on migration or at the breeding water , and a highly vocal courtship ritual commences . The elaborate breeding performance includes head @-@ shaking , a head @-@ lowered " cat " display , parallel rushes in an upright position and mutual presentations of green weeds , and culminates in a " penguin " dance in which pair members raise the whole body upright , breast to breast .

Like all grebes , the red @-@ necked grebe nests near water into which it can escape , since the position of the legs far back on the body prevents fast movement on land . It often breeds further within reed beds than other grebes . The nest is a floating platform of plant matter anchored to submerged or emergent vegetation , in water 0 @-@ 5 ? 0 @-@ 75 m (20 ? 30 in) deep , and with the bulk of nest below the water line . Egg @-@ laying mainly takes place from mid @-@ April to May in Europe , and somewhat later , from mid @-@ May to June , in North America . Parents may leave the nest for significant periods of time during the night , possibly to evade nocturnal predators . It is unclear whether this is for self @-@ protection or to protect the eggs by diverting attention from the nest ; the clutch does not appear to suffer from this temporary abandonment , whatever the reason .

The red @-@ necked grebe lays four or five (range one to nine) dull white or pale blue eggs , which average 3 @-@ 4 cm (1 @-@ 3 in) in breadth , 5 @-@ 1 cm (2 @-@ 0 in) in length , and weigh about 30 @-@ 5 g (1 @-@ 08 oz) , of which 10 % is shell . Parents take turns to incubate the eggs for 21 ? 33 days until the precocial downy chicks hatch ; they immediately climb onto the parent 's back , where they spend most of their time until they are 10 ? 17 days old . The young may be fed by the parents for up to 54 days after fledging , and can fly at 50 ? 70 days . The parents do not interfere with the feeding of their chicks when they are still being carried . Later they care for the younger chicks for longer , and are aggressive with the older offspring . This equalises the post @-@ fledging survival of all chicks , and encourages their independence . The brood may be split , so that each parent feeds only some of the chicks . This spreads the feeding demand equally between the parents .

After breeding the adults moult their wing feathers and are temporarily flightless ; migration commences once the flight feathers have regrown . The red @-@ necked grebe is normally single @-@ brooded , although second broods and re @-@ nesting after a clutch has been lost may extend nesting into July or August .

Eggs may be destroyed and chicks killed by a range of predators , including the raccoon in North America and the carrion crow in Europe . Pike may take swimming chicks . On average , for each adult , 0 @.@ 65 young birds are still alive by their fourth month , although the mortality rate for the adult is unknown . Red @-@ necked grebes attempt to evade birds of prey by diving ; when feeding , dives average less than 30 seconds , although escape dives are more prolonged .

= = = Feeding = = =

On the breeding grounds , the red @-@ necked grebe feeds mainly on invertebrates including adult and larval aquatic insects , such as water beetles and dragonfly larvae , crayfish and molluscs . Fish (such as smelt) may be important locally or seasonally , especially for the American subspecies , and crustaceans can constitute up to 20 % of the grebe 's diet . Birds breeding at the coast often make foraging flights to inland lakes or offshore areas to feed .

Aquatic prey is obtained by diving or by swimming on surface with the head submerged , and terrestrial insects and their larvae are picked off vegetation . A line slanting downward from the eye to the tip of the opened lower mandible may be used for sighting on prey before diving or when swimming under water . The grebe probably opens its bill and looks down the eye @-@ line toward its target . European breeders , which have to compete with the larger great crested grebe for fish , eat a greater proportion of invertebrates than the longer @-@ billed American subspecies , although both races eat mainly fish in winter . Birds of the nominate subspecies from the northernmost breeding populations in Finland and Russia , beyond the range of great crested grebe , have a longer and more slender bill than those further south , reflecting a greater proportion of fish in the diet where their main competitor is absent . If food is scarce , parents may desert unhatched eggs , or allow the smallest chicks to starve , although the latter strategy appears not to be particularly efficient in protecting the older chicks .

Like other grebes , the red @-@ necked grebe ingests large quantities of its own feathers , which remain in the bird 's stomach . Feathers are not only swallowed by adults , mainly during self @-@ preening , but are often fed to the young , sometimes within a day of hatching . These feathers soon decompose into a felt @-@ like , amorphous mass . The function of the feathers in the stomach is unknown , although it has been suggested that they help to protect the lower digestive tract from bones and other hard , indigestible material .

= = Status = =

The red @-@ necked grebe has a large range , estimated at 1 ? 10 million square kilometres (0 @.@ 4 ? 3 @.@ 8 million square miles) , and a global population of 150 @,@ 000 ? 370 @,@ 000 individuals , with *P. g. holboellii* about twice as numerous as the nominate race . The population trend has not been quantified , but it is not believed to meet the thresholds for the population decline criterion (declining more than 30 % in ten years or three generations) of the IUCN Red List . For these reasons , the species is evaluated as Least Concern .

The red @-@ necked grebe is one of the species to which the Agreement on the Conservation of African @-@ Eurasian Migratory Waterbirds (AEWA) applies . Parties to the Agreement are required to engage in a wide range of conservation strategies which are describes in a detailed action plan . The plan is intended to address key issues such as species and habitat conservation , management of human activities , research , education , and implementation .

The Red @-@ necked Grebe was hunted by humans in northern Europe in the Mesolithic and Paleolithic periods , but there is no evidence that there is any significant level of hunting at the present time . In North America , there are potential threats from pollutants such as polychlorinated biphenyls (PCBs) and pesticides such as DDT which cause reduced reproductive success due to egg sterility and eggshell thinning . Breeding areas may be threatened by the modification and degradation of lakes and by human disturbance from water @-@ based recreational activities . There is no evidence to suggest that these threats could result in a significant risk to the overall population ; more than 70 % of North American red @-@ necked grebes breed in Canada , where

the population is stable or increasing .