

## Articles

### Breeding Records of Eared Grebe in Ontario

Glenn Coady, Mark K. Peck, David H. Elder, and Brian Ratcliff

#### INTRODUCTION

The Eared Grebe (*Podiceps nigricollis*) is the most numerous and widespread of the world's grebe species (del Hoyo et al. 1992). It comprises three subspecies. The nominate subspecies (*P. n. nigricollis*) breeds locally throughout much of Eurasia from Britain and southern Scandinavia east to western Siberia, and south to Iraq, Afghanistan, Manchuria, India and Pakistan. It also breeds in Africa from Morocco in the west to the Rift Valley from Ethiopia to northern Tanzania in the east (Cullen et al. 1999). Another subspecies (*P. n. gunneryi*) breeds in South Africa (Transvaal to Cape Province), Angola, Mozambique and Namibia (Harrison 1983, O'Donnel and Fjelds  1997).

All Eared Grebes in the western hemisphere belong to a third subspecies (*P. n. californicus*) which breeds in Canada in the British Columbia interior (Okanagan Valley, Kootenay Region, Peace River lowlands) (Campbell et al. 1990); Alberta, east of the Rocky Mountains, as far north as Fort Vermillion (Semenchuk 1992); a

disjunct population in southern Yukon (Jones 1985); southern Saskatchewan north to Kazan Lake and Nipawin (Smith 1996); southwestern Manitoba north to Shoal Lake (Salt and Salt 1976) and in extreme northwestern Ontario in the Rainy River area (Elder and Simms 1997). It breeds in the United States along the Canadian border between southeastern Washington (Smith 1996), Montana, North Dakota (Stewart 1975) and western Minnesota (Janssen 1987; Boe 1992, 1994) and south to northwestern Iowa (Dinsmore et al. 1984, Dinsmore 1996), central Nebraska (Johnsgard 1979), eastern Colorado (Nelson 1998), northwestern New Mexico (Hubbard 1978), northeastern Arizona (Monson and Phillips 1981), and west through Utah (Hayward et al. 1976), southern Idaho (Stephens and Sturts 1997), northern Nevada (Alcorn 1988), southeastern Oregon (Gilligan et al. 1994), and northeastern California and the Central Valley (Small 1994) southwest into northern Baja California (American Ornithologists' Union 1998). It has bred sporadically east to Wisconsin (Robbins 1991),

northwestern Illinois (Bohlen 1989) and central Texas (Oberholser 1974), and possibly Michigan (Adams 1991, Granlund 1991). Apart from the northwestern Mexico range, an isolated population also breeds locally in central Mexico (Dickerman 1969, Wilson et al. 1988).

In Ontario, the Eared Grebe was the last species of grebe to be added to the provincial bird checklist. Ontario's first record of Eared Grebe involved a pair of birds observed on 28 April 1948 by George W. North in Hamilton Bay, off Carroll's Point, Woodland Cemetery, *Hamilton-Wentworth* (Baillie 1957). In each subsequent decade, the number of Eared Grebe sightings in Ontario has increased, to the point where it is now considered a rare annual migrant in both spring and fall, an occasional winter straggler in the lower Great Lakes, and a rare summer resident at Rainy River (James et al. 1976, James 1991). In 1990, twenty-one records of Eared Grebe were noted in Ontario (Weir 1991). The first confirmed nesting of Eared Grebe in Ontario occurred at the Emo sewage lagoons, *Rainy River*, in 1996 when two young fledged from a single nest (Elder and Simms 1997).

In 2001, the authors discovered an Eared Grebe nest at the Emo sewage lagoons and two pairs of Eared Grebes performing courtship displays at the Rainy River sewage lagoons during field work on behalf of the second Ontario Breeding Bird Atlas (2001–2005). The pur-

poses of this paper are to document this Eared Grebe nest, detail some aspects of breeding biology noted during these observations, and summarize the previous breeding records for Eared Grebe in Ontario.

## OBSERVATIONS

### **Emo, Rainy River**

David Elder discovered a pair of Eared Grebes in the east pond of the Emo sewage lagoons on 31 May 2001 prior to leading an Ontario Field Ornithologists trip in Rainy River (Roy 2002). He observed a pair of birds on the same lagoon on 2 June 2001.

On 3 June 2001 at 1230h, Glenn Coady visited the Emo sewage lagoons at the start of a two week field trip to the Rainy River area on behalf of the Ontario Breeding Bird Atlas. He noted an Eared Grebe foraging in the east pond, and while circling around the west side of that pond, flushed a second Eared Grebe from shore out into the pond. It emerged from the water in a very vertical fashion, beat both feet on the water sending up a visible spray, and submerged in a folding "crash dive" similar to that described by Cullen et al. (1999) as a frequent response to nest disturbance. A search of the area where the bird appeared to have flushed revealed a partially hidden nest with four eggs, partly covered with vegetation. The nest was a messy pyramidal platform of mud and wet vegetation on a bed of dead, bent-

over cattail (*Typha* sp.) leaves within a stand of living cattail, on the perimeter of the sewage lagoon, very close to the northwest corner of the east pond. It was placed less than a metre from the water's edge and was about 15 cm above the water surface, where the incubating adult could easily slip off into the water if disturbed. (Nest location: 15U 438024 5387558 North American Datum 1983; 48° 38' 16.8" N, 93° 50' 28.5" W.) The four eggs were white and showed some slight light brown staining. They were partially hidden by algae and wet cattail leaves. To minimize disturbance, no attempt was made to obtain nest or egg dimensions. The incubating bird quickly returned to the nest within ten minutes and about an hour later the other member of the pair assumed incubation duties. When not incubating, the birds spent the majority of the time foraging. They were often seen surface feeding or making a series of short (10–15 second) dives, often in the same favoured feeding location on the pond. Such short dive times are typical when foraging in shallow ponds (Sealy 1985). Eared Grebes consume a wide assortment of aquatic prey, primarily invertebrates such as insects (water boatmen, diving beetles, caddis fly larvae, brine flies, mayflies, midges, moths, damselflies, dragonflies) and small crustaceans (particularly brine shrimp in hypersaline environments). They will less frequently consume small fish, molluscs and amphibians (Cullen et al. 1999).

On 7 June 2001 at 1200h, Elder and Brian Ratcliff independently discovered this nest. Upon inspection, the nest was well covered with vegetation, with at least one egg clearly visible, however. On arrival, a pair of birds was present on the east pond and they saw one of the two disappear into the cattails at the west end. They retreated to view the birds with a scope and saw a grebe return to the nest area. When they examined this section of the pond, Ratcliff was able to detect the incubating bird leaving the covered nest.

On 7 June 2001 at 1400h, Coady returned to the Emo lagoons and noted both adult Eared Grebes still present and that the nest still contained four eggs. Both adult Eared Grebes were observed to harass a lone American Coot (*Fulica americana*) in the breeding pond, repeatedly attacking it from beneath the water surface, and eventually driving it out to the other lagoon, likely in defense of their nesting territory. The American Coot is the most prevalent predator of Eared Grebe nests, eating eggs or often damaging them to usurp unguarded nest sites (Boe 1993).

On 7 June 2001 at 1500h, Mark Peck, George Peck and Roy Smith also independently discovered this nest and noted that it contained four eggs. They did not observe the American Coot in either pond.

On 10 June 2001 at 1500h, Coady, the Pecks and Smith returned to Emo and observed the

Eared Grebe nest from a blind. Mark Peck obtained still photographs of the incubating adult at the nest (Figures 1 and 2) and of the nest and eggs (Figure 3). Coady similarly obtained videotape documentation of the nest. It was noted that the water level was perhaps a few centimetres lower than on 7 June, as the bird had to climb slightly higher to reach the nest and was videotaped requiring two attempts to make the climb successfully on one occasion. Eared Grebes also commonly build floating nests anchored to submerged or emergent vegetation over open water (Cullen et al. 1999). Clearly, this strategy poses advantages in terms of greater protection from both

fluctuating water levels as well as ground-based mammalian predators, but leaves them at greater risk of nest failure due to wind damage, which is common (Boe 1994).

This same group of observers returned to Emo upon departure from the Rainy River area on 16 June 2001 at 0830h. One Eared Grebe was noted foraging in the nest pond and the other bird was assumed to be incubating. The water level of the pond did not appear appreciably different than it was on 7 June.

On 28 June 2001, Elder returned to Emo on the way to Winnipeg. He found that the water level in the east pond was down almost a metre in depth and that



**Figure 1:** Adult Eared Grebe incubating nest at Emo sewage lagoon on 10 June 2001. Photo by Mark K. Peck.



**Figure 2: Adult Eared Grebe inspecting clutch of four eggs at Emo sewage lagoon on 10 June 2001. Photo by *Mark K. Peck*.**



**Figure 3: Nest and four eggs of Eared Grebes at Emo sewage lagoon on 10 June 2001. Photo by *Mark K. Peck*.**



there was about a one-metre wide strip of mud between the water's edge and the nest site in the perimeter cattail bed. The Eared Grebes had abandoned this nest and were no longer present at the sewage lagoons.

In 2002, Elder discovered four Eared Grebes on the Emo sewage lagoons on 1 June, and two were still present on 7 June (Bain 2002), but no evidence of further nesting was discovered.

### **Rainy River, *Rainy River***

On 1 June 2001, Elder discovered four Eared Grebes in the Rainy River sewage lagoons (Roy 2002).

On 3 June 2001 at 1620h, Coady visited the Rainy River lagoons where four Eared Grebes were still present on the east pond. The four grebes were acting like two separate pairs, as they remained apart in different portions of the pond. Both pairs appeared to be engaged in courtship behaviour. In both pairs, the birds were repeatedly vocalizing and approaching one another, face-to-face, with necks erect and crests stiffly raised. One pair was seen to simultaneously rise up out of the water into a dance posture with crests erected, touching bills and chests in a manner consistent with the "Penguin Dance" detailed by Cullen et al. (1999). Between displays, members of each pair often engaged in ceremonial self-preening before their partners.

On 4 June 2001 at 1120h, Coady again observed four Eared

Grebes (two pairs) actively courting in the east pond of the Rainy River lagoons. The birds were very vocal and were still performing dance ceremonies together. One pair performed a weed presentation display, where one partner gave nest material to the other. In ninety minutes of observation, no actual nest construction or copulation was observed, however.

On 5 June 2001 at 1030h, Coady again observed the two pairs of Eared Grebes performing courtship displays. Once, when the two pairs met near the centre of the pond, both members of one pair reared up and simultaneously charged across the water to drive the other pair back to the south end of the pond. Such hostile interactions between pairs are often quite common (McAllister 1958), most often in periods of synchronous egg laying. However, after 45 minutes of observation, no copulation nor construction of copulatory platforms or nests was observed.

On 6 June 2001 at 1130h, Coady found only a single pair of Eared Grebes at the Rainy River lagoons. It is not known whether the other pair had been driven out of the area. Eared Grebes are normally very gregarious and are usually colonial nesters, with territorial defense confined to the immediate nest area (Boe 1994). In fact, dense colonies can have nest platforms as close as 0.5 m apart, and sometimes even touching (Hill et al. 1997). The disappearance of the second pair is thus some-

what enigmatic. Courtship behaviour noted consisted mostly of preening displays by the remaining pair.

On 8 June 2001 at 1845h, Coady, Mark Peck, George Peck and Roy Smith visited the Rainy River sewage lagoons. On this visit, the lone remaining pair of Eared Grebes was still present on the east pond. Both birds were foraging simultaneously with no evidence of any nest incubation. The birds were silent and did not appear to engage in much courtship activity, often even foraging apart from each other. A thorough search of the perimeters of both ponds revealed no evidence of any Eared Grebe nest. Neither pond showed evidence of any emergent or submerged vegetation suitable for the building of floating nests. Further visits to these lagoons on 11 and 15 June failed to find any Eared Grebes present. It is unclear why neither pair of grebes nested at this location. Perhaps the lack of emergent vegetation for a floating nest was a factor. It is also possible they indeed attempted to nest and subsequently failed without detection. It has been shown that as little as three hours is sufficient time for nest platform construction by Eared Grebes (McAllister 1958).

In 2002, Elder discovered a lone Eared Grebe on 1 June at the Rainy River sewage lagoons. No evidence of any nesting attempt was discovered (Bain 2002). The repeated failure of Eared Grebes to nest at this location remains puzzling.

## Discussion

All the known records of Eared Grebe in Rainy River District have been at these two sewage lagoons (Elder and Simms 1997). This might simply be a reflection of observer coverage bias in favour of such sewage lagoons versus more natural wetlands in the area. However, Cullen et al. (1999) noted that sewage treatment ponds were often the source of new breeding locations for Eared Grebe and this has been cited in the case of Minnesota (Boe 1992), Illinois (Bohlen 1989) and quite likely Michigan (Adams 1991, Granlund 1991). Thus far, the Ontario breeding records are entirely consistent with this phenomenon.

There may be several factors that explain why Eared Grebes demonstrate a preference for sewage treatment lagoons when colonizing new areas:

- 1) The combination of a lack of fish predators and unnaturally high nutrient loading may serve to provide highly abundant macroinvertebrate prey communities more similar to the conditions of ease of foraging on the hypersaline lakes upon which they have adapted to staging and wintering.
- 2) They present ponds of a preferred size, with mostly open water with emergent vegetation and treeless perimeters, often in areas where that preferred combination is in short supply among local natural wetlands.

3) They provide habitat that is less likely to be shared with their major predator, the American Coot, and likelier to avoid competition with Pied-billed Grebe (*Podilymbus podiceps*), a species which often harasses and excludes them (Wetmore 1920, Faaborg 1976).

4) Restricted human access and lack of any recreational pressures provide a habitat with less disturbance than similar local natural wetlands. Boe (1992) demonstrated that wetland selection in Minnesota was negatively associated with public access and recreational usage.

### **Reported Breeding Records of Eared Grebe in Ontario**

The following records summarize the reported breeding records for Ontario, sorted by County or District. (Source: Ontario Nest Records Scheme):

#### **Rainy River**

Records of Eared Grebe at the Rainy River sewage lagoons go back to one observed on 1 June 1982 by Ron Tozer (James 1984a). On 29 May 1992, two Eared Grebes were observed at the Rainy River lagoons by Rob Parsons and David and Mary Elder (Weir 1992). By 5-6 June 1992, eight Eared Grebes were being observed there by Don Graham (Bain 1993). A first Ontario nest record seemed inevitable until hopes were dashed when the water levels in the lagoons were drastically lowered and the birds disappeared. A lone bird was recorded there later that summer on 25 June by Doug Sadler and A. Bigg (Ridout 1992). On 24 May 1996, Elder discovered two Eared Grebes on the Rainy River lagoons which remained a few days but once again failed to nest (Ridout 1996, Elder and Simms 1997). On 1 June 2001, Elder discovered four Eared Grebes again at this lagoon. From 3-5 June 2001, Coady observed these two pairs of grebes exhibit territorial and courtship behaviour, with one pair remaining until 8 June. Elder discovered a lone Eared Grebe there on 1 June 2002, but no evidence of breeding was observed. Despite such promise, none of these birds have ever provided any evidence of nesting. It is puzzling why these grebes continually fail to nest at this location.

1996 On 11 May, Elder and Roger Simms discovered an adult Eared Grebe in the Emo sewage lagoons. On 23 May, Elder and others observed two Eared Grebes in the east pond. On 31 May and 3 June, Coady observed two birds engaged in courtship activities and, on 7 June, advised Elder and Simms that he thought nesting was a good possibility. That evening at 1930h, Simms visited the Emo sewage lagoons and found a lone Eared Grebe sitting on a nest anchored to an emergent old clump of cattails. On 14 June at 1000h, Elder and Simms observed a lone adult still incubating this nest. On 22 June at 1215h, Simms observed one downy young on the back of one of two adults present. On 30 June at 1100h, Simms observed one adult with one young on its back and a second young in the water. On 6 July, an adult and one young were observed by Alan Wormington, Glenn Coady, Derick Sweeting and John Keenleyside. Wormington obtained photographs of these two birds to provide conclusive material evidence for Ontario's first nest record (Elder and Simms 1997). On 7 July at 1045h, Simms observed two young with both adults. On 9 July, Simms and Elder observed one adult with one nearly full-grown young. On 14 July at 1430h, Simms observed one adult and one young. On 18 August at 0945h, Simms saw two fully grown immature birds at the Emo lagoons with no adults present. There were



no subsequent observations of Eared Grebes despite a search by Simms on 25 August at 1015h.

- 1997 On 29 May, David and Mary Elder discovered an Eared Grebe on a nest in the middle of the east pond at the Emo sewage lagoons in virtually the same location as the 1996 nest. Another adult was observed foraging nearby. On 8 June, Roger Simms noted an adult on this nest and the other adult bringing vegetation to help maintain this nest. On 15 June, Simms observed that this first nest was gone but that the two adults were still present. By 18 June, Simms noted a second nest under construction by the two adults. It was near the centre of the east lagoon somewhat to the east of the first nest. On 23 June, Simms noted that this second nest appeared to be abandoned with a Wood Duck (*Aix sponsa*) on top of it. Nearby, he noted the two Eared Grebes constructing a third nest platform. On 27 June, Simms was unable to find this third nest but observed the pair of Eared Grebes initiating a fourth nest. On 28 June, Simms discovered an adult incubating this fourth nest and two additional adults, one attentive to the fourth nest and the other foraging nearby. On 6 July, Simms observed an adult still incubating the fourth nest, another adult incubating a newly discovered fifth nest and another adult foraging nearby. On both 13 and 14 July, Simms noted adults still incubating the fourth and fifth nests with two additional adults foraging nearby. On 20 July, Simms and Elder observed these same four birds and saw the bird incubating the fourth nest turning two whitish eggs. On 24 July, Simms noted one adult seen turning eggs at the fifth nest and nearby another adult was seen swimming with a downy young on its back. On 26 July, Simms noted that both the fourth and fifth nests were unoccupied but four adults were swimming in the east pond, two of which had two downy young each. On 27 July, Simms noted one pair of adults with two young swimming beside them, and a second pair of adults with one young swimming beside them and a second young on one adult's back. On 9 August, Simms noted two adults with four young foraging nearby. On 19 August, Simms observed two adults with four now rather large young foraging along with them. By August 23, Simms and Elder noted two adults and four young still present, and they had molted into winter/immature plumages that were beginning to become difficult to tell apart, particularly with the young being adult-sized. Two pairs of Eared Grebes were successful in raising two young each.

- 2001 Elder discovered a pair of Eared Grebes on the east pond of the Emo sewage lagoons between 31 May and 2 June. On 3 June, Coady discovered a nest and four eggs on the water's edge in the northwest corner of the east pond. This nest was independently discovered by separate parties of Elder and Brian Ratcliff followed by Mark Peck, George Peck and Roy Smith on 7 June. This nest (still with a clutch of four eggs) was documented with still photographs by Mark Peck and with videotape by Coady on 10 June. On the morning of 16 June, it appeared that this nest was still active. However, by 28 June, Elder found the water levels of the pond had dropped about a metre, leaving the nest location high and dry and deserted by the adult Eared Grebes. In 2002, Elder discovered that four Eared Grebes had returned to the Emo lagoons on 1 June, with two birds still present on 7 June. No evidence of nesting was obtained.

#### **Lambton**

- 1996 On 29 August, Alfred H. Rider discovered an adult Eared Grebe feeding a large juvenile in the Thedford sewage lagoons (Ridout 1997a). On 9 September, he observed the nearly fully grown juvenile Eared Grebe still being fed by an adult. These two birds were also observed by Peter Chapman (pers. comm.) and several

other observers. On 12 September, Rider last observed these two birds, although the juvenile bird was no longer being fed by this date. Several aspects of this occurrence make it quite compelling as a likely breeding record. Jehl (1997) demonstrated that Eared Grebes undergo extreme changes in body composition several times throughout the year, rendering them flightless for a greater period of time than any other North American bird. Throughout a majority of the year, most individual Eared Grebes may be capable of flight only for a few days prior to and after periods of migration. Consequently, Eared Grebes seldom fly except during migration. Migration is entirely nocturnal, with movement from breeding to staging areas with few, if any, stops. The distance a bird can cover on a leg of migration is limited by the length of the period of darkness on the date of migration, as these heavily wing-loaded birds are subject to heavy predation by avian predators if caught still migrating in daylight hours. Adults normally undergo a molt migration away from breeding areas prior to migration by their juveniles. This differential timing of migration was evident with the 1996 Emo nest. Cullen (1998) demonstrated that it is very uncommon for young Eared Grebes to receive bi-parental care after 10 days of age and any parental care at all after 20 days, and that subsequently, adult Eared Grebes normally leave their breeding wetlands before their young are capable of flight. Reviewing Rider's 1996 chronology of observations in light of these aspects of Eared Grebe biology would seemingly leave little likelihood of any explanation other than a local nesting at the Thedford sewage lagoons. Jehl (pers. comm.) concurred with this assessment of these observations. This record is significant not only because it extends the known breeding range into southern Ontario, but also because a search of the literature for jurisdictions south and east of the lower Great Lakes (Hall 1983, Leck 1984, Laughlin and Kibbe 1985, Kain 1987, Adamus 1988, Zeranski and Baptist 1990, Peterjohn and Rice 1991, Brauning 1992, Monroe 1994, Gauthier and Aubry 1996, Levine 1998, McWilliams and Brauning 2000) suggests that this record may represent the easternmost breeding record for North America.

- 1997 Adding further credence to the likelihood of a 1996 nesting by Eared Grebe at the Thedford sewage lagoons, Rider subsequently discovered a pair of adult Eared Grebes on 16 June, actively engaged in courtship displays for seven days before the presumed female disappeared (Ridout 1997b). It is also interesting to note that a very similar situation occurred in Midland County in Michigan on the opposite side of Lake Huron at similar latitude in 1990 (Adams 1991, Granlund 1991). A good example of another predominantly western species that exhibited such an ephemeral, extralimital breeding record in southern Ontario is the Cinnamon Teal (*Anas cyanoptera*), a nest of which was found at the Amherstburg sewage lagoons, Essex, on 24 June 1983, by Alan Wormington (James 1984b).

## ANALYSIS

Banks and Clapp (1987) documented the recent increase in Eared Grebe sightings along the Atlantic and Gulf coasts and postulated that it represented either an increase in observer competence or a real expansion of winter range. A similar increase in Eared Grebe records has been noted in Ontario and

jurisdictions from Wisconsin (Robbins 1991), Michigan (Adams 1991), Ohio (Peterjohn and Rice 1991), New York (Levine 1998), and Pennsylvania (McWilliams and Brauning 2000), to New Jersey (Leck 1984) in the last fifty years. It would seem likely that in this time period, a new wintering tradition

has developed among a small portion of the continent's Eared Grebe population.

Most of the breeding birds in the western part of the Eared Grebe's range migrate to staging areas in the hypersaline environments of Mono Lake, California, and Great Salt Lake, Utah, before migrating to wintering grounds in the Salton Sea and the Gulf of California. An analysis of banding recoveries from 1955-1984 (Jehl and Yochem 1986) showed that a much smaller portion of the breeding population from the eastern part of the breeding range winters in the Gulf of Mexico and northeastern Mexico. It would appear that the increase in records of Eared Grebe in the last 50

years from the provinces and states that border the lower Great Lakes through to the mid-Atlantic coast likely represents a new wintering tradition of a small portion of the population of the east part of the breeding range that migrates to staging areas on the lower Great Lakes and then on to wintering areas on the mid-Atlantic coast. An early recovery of an Eared Grebe banded as a nestling in southwest Saskatchewan on 13 August 1953 and recovered at Niagara Falls on 16 May 1954 (Jehl and Yochem 1987) illustrates how just such a tradition could be started by random vagrants. Such a new wintering tradition could conceivably exert a pull on the eastern limits of the breeding range. Additional species for whom very small portions of their prairie breeding populations have established regular traditions of migrating southeast to the Atlantic coast include Marbled Godwit (*Limosa fedoa*), American Avocet (*Recurvirostra americana*), and Long-billed Curlew (*Numenius americanus*).

## SUMMARY

The authors have documented a third confirmed breeding attempt by the Eared Grebe in *Rainy River* District in Ontario, and provided reason to consider the likelihood of an additional breeding record in southern Ontario.

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