

The Occurrence and Identification of King Eider in British Columbia. By Jamie Fenneman and Rick Toochin



Photo 1: Flock of King Eiders containing 3 breeding-plumaged adult males, 1 presumed second-spring male (second male from the left), 1 first-spring male (front, centre), and 3 females. Compare this first-spring male to Photos 8, 9 & 10. The second-spring male is aged by its slightly reduced orange frontal shield, although this ageing is tentative without a more complete view of the bird. Note the overall dark rufous-tinged plumage, chevron-shaped barring and rounded head of females. Photographed in Norway on March 9, 2004 [Markus Varesvuo/ www.birdphoto.fi].

Introduction:

The first record of King Eider (*Somateria spectabilis*) for British Columbia was a male collected on October 18, 1938 in Hardy Bay, at the northern end of Vancouver Island (Table 1, item 1). Over the course of the next few decades, records of this beautiful northern sea duck slowly increased in coastal British Columbia and, indeed, down west coast of North America. Recent records have shown this species to be of somewhat regular occurrence along the coast of British Columbia, usually occurring in association with the large flocks of Surf (*Melanitta perspicillata*) and White-winged (*M.fusca*) Scoters that inhabit this region. Although the identification of full-plumaged males could hardly be described as difficult, identification of females, as well as correct ageing of immature males, may prove more difficult to observers unfamiliar with the species. Many males reported in British Columbia, even those suspected of being adult, may in fact be sub adult or near-adult (i.e. late second calendar-year or early third calendar-year) birds, a fact that is not necessarily immediately obvious in many instances. This article will examine some of the identification concerns presented by this species in British Columbia, including a discussion of the plumage sequence of immature males, as well as provide a thorough synopsis of its status and distribution in the province.

Distribution and Habitat:

King Eider is a circumpolar breeder that is widely distributed across the high arctic coastlines of Eurasia and North America (Johnsgard 1978). In North America, this species breeds along arctic seacoasts from northern and western Alaska east to northern Quebec, north through the Canadian arctic islands to Ellesmere Island (Suydam 2000). Outside of North America, King Eider also breeds in coastal Greenland, Iceland, and across Eurasia from Scandinavia to the Bering Sea coast of eastern Siberia (Suydam 2000). Atlantic populations winter in coastal areas of northwestern Europe and eastern North America, south to Virginia (casual to Florida). Pacific populations, including birds from breeding areas in both north-western North America and eastern Siberia, winter on coastal waters of north-eastern Asia (rarely south to Japan) and western and southern Alaska, including the Aleutian Islands (Suydam 2000), although this species is generally considered rare in winter east of Kodiak Island in south-central Alaska (Suydam 2000). Further south, King Eider is considered casual to very rare in southeast Alaska, coastal British Columbia, and along the Pacific coast of the United States in Washington (16 records), Oregon (8 records), and California (36 records) (Mlodinow 1999); additional recent sightings (late 2005) have been made in coastal areas of Washington and Oregon. This species is also casual at scattered inland locations across North America south to Texas, most frequently on the Great Lakes, with the most recent example of this being a first-winter individual in Banff National Park, Alberta in December 2005 (Photo 8). Despite occurring in both the Pacific and Atlantic basins, this species is considered monotypic with no subspecies recognized (Suydam 2000).

Nesting on freshwater lakes, pools, and streams in arctic tundra, as well as along arctic seacoasts, wintering birds are invariably tied to marine habitats both within the normal wintering range of the species as well as along the coast of B.C. (Johnsgard 1978, Suydam 2000). Wintering birds forage primarily on marine algae and invertebrates such as bivalves, molluscs, sea urchins, sand dollars, and crustaceans (Johnsgard 1978, Suydam 2000), and vagrants in B.C. have been observed feeding voraciously on whole oysters (J.Fenneman, pers.comm.).

Identification and ageing:

An adult male King Eider in breeding plumage, one of the most beautiful and distinctive ducks in North America, presents few, if any, identification concerns when observed under normal viewing conditions, even at long range. A combination of the fairly large size, multi-coloured head pattern, head shape, bill colour (red), rosy blush on the breast, short sail-like scapulars protruding from the back, and pattern of black and white on the body should enable correct separation from any other black-and-white sea duck occurring in British Columbia (Photos 1, 2 & 3). Males of several other species of eider that occur in British Columbia as exceptional vagrants, including Common (*Somateria mollissima*) and Spectacled (*S. fischeri*) Eiders (Campbell *et al.* 1990, Toochin 1997), are easily differentiated from the more frequent King Eider by these features, as are more

regularly occurring black-and-white species such as goldeneyes (*Bucephala* spp.) and Long-tailed Duck (*Clangula hyemalis*). Given the ease of identification of breeding males, the real identification challenge with King Eider in the context of British Columbia is the correct identification of females and eclipse-plumaged males, as well as the correct identification and ageing of immature and sub-adult males.



Photo 2: Male King Eider in breeding plumage. Unmistakable! A large, very colourful arctic sea duck. Bulbous orange frontal shield and sharply defined white patch on upperwing separate this age class from advanced birds in their second winter or second spring (Photos 12, 13, 14 & 15). Photographed in Norway on March 9, 2004 [Markus Varesvuo/www.birdphoto.fi].



Photo 3: Male King Eider in breeding plumage. This individual exhibits the bold white upperwing patches and bulbous orange frontal shield that are characteristic of this age class. Compare to second-winter and second-spring birds (Photos 12, 13, 14 & 15). Photographed on Southampton Island, Nunavut in June 1999 [Mitch Meredith]

Identification of Adult Males in Eclipse Plumage

Adult males molt into a non-breeding eclipse plumage between July and August, with the majority of birds still showing full or partial eclipse at least into late October (Blomdahl *et al.*); some individuals may show some signs of retained eclipse plumage as late as December (Suydam 2000). This relatively poorly known plumage is very different from the more widely known breeding plumage and is seen principally on the arctic breeding grounds following the breeding season. Although it has not been described from British Columbia as of 2006, the possibility of non-breeding summering males occurring in eclipse plumage, as well as the possibility of fall males showing signs of partial retention of eclipse characteristics, suggests that observers in this province should be aware of the features associated with this plumage. Eclipse males are known to occur far south of the breeding range in western Europe during fall migration, at which point they are often erroneously identified as sub-adults by observers who are unfamiliar with the plumage (Blomdahl *et al.*). Additionally, the occurrence of an eclipse-plumaged adult male Common Eider in August 2004 at Port Angeles, Washington (Shepard 2006) suggests that the possibility of a summering adult King Eider occurring along the British Columbia coast is not inconceivable.

Eclipse male King Eider is overall dark chocolate brown (Photos 4 & 5), with variable white flecking on the breast and, often, mantle (Lewington *et al.* 1991). The bill is reddish with an expanded, bright orange frontal shield at the base of the bill as in breeding plumage, although the frontal shield is usually slightly reduced in size (Blomdahl *et al.*). The upper wing coverts sport sharply-defined, pure-white oval-shaped patches as in breeding plumage, a feature which helps differentiate birds in this plumage from birds in immature, particularly those in their first-winter or first-spring (Lewington *et al.* 1991). A further distinction between eclipse and first-spring males is the timing of these plumages, with eclipse birds occurring in the summer and fall and first-winter or first-spring birds from the mid- to late winter through spring. Due to these differences in timing, these plumages should rarely, if ever, be confused.

Eclipse male King Eider can be distinguished from eclipse-plumaged male Common Eider by the differences in head and bill shield shape (see Identification of Females, below), red (vs. orange) bill, expanded orange frontal shield, and less extensive white on the upper parts and upper wing coverts. Common Eider, in comparison, shows extensive white on the scapulars, wing coverts, and upper parts. Even at fairly long distances, these features should be sufficient to easily distinguish these two species in eclipse plumage.



Photo 4: Male King Eider in eclipse plumage. Imparts an overall dark blackish-brown impression, with paler brownish or whitish mottling on the breast. Although slightly reduced from breeding plumage, the orange frontal shield is still very prominent. The adult-like wing pattern (white patch on upperwing coverts) and large frontal shield help differentiate birds in this plumage from birds in their first winter. Photographed in Norway on August 28, 2003 in Hordeland, Norway [Frode Falkenberg/www.cyberbirding.no].



Photo 5: Male King Eider in eclipse plumage. This individual also exhibits the large, bright frontal shield and white patch on the upperwing that help identify this plumage. The occurrence of eclipse plumage in late summer and fall further distinguishes it from the similar first-winter plumage which occurs primarily from mid-winter to spring. Notice the short, sail-like modified scapulars on the back, which are characteristic of this species of eider. Photographed in Hordeland, Norway on September 11, 2005 [Frode Falkenberg/www.cyberbirding.no].

Identification of Females

The identification of female eiders can, at times, be cause for concern, particularly between the two most similar species, King Eider and Common Eider (*Somateria mollissima*). The two additional Alaskan eider species (Spectacled Eider [*S. fischeri*] and Steller's Eider [*Polysticta stelleri*]) are highly distinctive in both male and female plumages and the identification of these species is well covered by other field guides and technical manuals (i.e., Sibley 2003, National Geographic Society 2002, Mullarney *et al.* 1999); as such, readers are directed towards these sources for additional information on these two species. Observers in coastal British Columbia, where King Eider is rare but regular and Common Eider has been recorded on several occasions, may be faced with distinguishing females of these two species and should be familiar with the characteristics of these species that can be used as distinguishing field marks.

Female King Eider is a smaller, overall rounder and more compact species than female Common Eider. The shape of the head and bill provide crucial field marks for separating these two species at both close range and at a distance. Female King Eider has a noticeably rounded head and steep forehead, with the demarcation between the forehead and the bill forming a noticeably concave angle (Photo 6). Female Common Eider, in contrast, has a long, flat, sloping forehead and flat crown, with the sloped forehead grading gradually into the bill with essentially no demarcation between the two angles (Photo 7). This feature gives female Common Eider a triangular or wedge shape to the entire head that is highly distinctive and very different from the rounded head of female King Eider. In addition, the size and structure of the bill itself differs between the two species, with female King Eider having a somewhat shorter bill with an upturned, "smiling" gape line and female Common having a longer bill with a less distinctive, straight gape line (Suydam 2000). At very close range, the shorter frontal processes of the bill (the portions of the base of the bill reaching back along the upper mandible towards the eye) and longer forward extension of the forehead feathers along the top of the bill (reaching the nostrils) in female King Eider can be used to distinguish this species from female Common, in which the frontal processes are much longer and the feathering along the top of the bill falls well short of the nostrils. Of note for observers in British Columbia, the race of Common Eider inhabiting Alaska and the western arctic ("Pacific" Eider, *S. m. v-nigrum*), which is the race that has occurred along the coast of British Columbia, is more similar in bill structure to King Eider than Common Eiders in the eastern arctic and northern Atlantic Ocean (Suydam 2000). As a result of this closer similarity, observers in B.C. are advised to be cautious when confronted with any female eider and to carefully note plumage pattern and body colour in addition to bill and head structure.

Additional plumage features that can be used to separate female King Eider from female Common Eider include the darker, more rufous-buff plumage, less distinct chevron-shaped barring over the body, pale buffy line from the eye to the nape (sometimes indistinct), and more

extensive white on the under wing coverts of female King. Female Common Eider, in contrast, has an overall paler, buffier plumage, bolder, denser and more regular dark barring over the body, less distinct pale buffy line from the eye to the nape, and has the white on the under wing less distinct and often largely restricted to the axillaries. Juvenile King Eiders are particularly similar in plumage pattern to female Common Eiders (Suydam 2000) but, since juvenal plumage is held only for a few weeks on the breeding grounds in King Eider, this similarity should have little bearing on the identification of the species in B.C. Additionally, non-breeding females in winter average paler and buffier than breeding birds, and thus closer to female Common Eider in this respect (Sibley 2003), which should be taken into consideration when viewing female eiders at long range in winter when only the overall plumage colour can be determined with any certainty.



Photo 6: Female King Eiders. Notice the rounded head, concave angle between the bill and forehead, "smiling" gape line, rufous-buff plumage, and dark chevron-shaped barring on the body which separate this species from Common Eider. The structure and shape of the bill provides a further distinction from female Common Eider (Photo 7). See Photo 1 for additional images of females. Photographed in Grimsby, Ontario on April 17, 2005 [Karl Egressy].



Photo 7: Female Common Eider, *v-nigrum* subspecies. The long, sloping forehead, flat crown, overall wedge-shaped head, paler buff plumage, and denser, bolder dark barring on the body can be seen here. Also note the structure of the bill in comparison to Photo 6. Photographed on Herschel Island, Yukon in July 1990 [Michael G. Shepard/<http://www.birdinfo.com/>].

Ageing and Identification of Immature Males

Descriptions of immature plumages and information on the extent and timing of molt are adapted largely from Suydam (2000) and Cramp *et al.* (1977). The ageing sequence presented here follows a calendar-year approach, such as is often used in European literature (i.e. Blomdahl *et al.* 2002), with descriptions of plumages and molts following the Humphrey and Parkes system. For further information on this terminology, please consult Pittaway (2000). Use of more widely known terminology such as first-winter, second-summer, etc. is not applicable to waterfowl species as the molt sequence of these birds does not conform easily to such a system (Madge and Burn 1988).

	J	F	M	A	M	J	J	A	S	O	N	D	
1st-yr								Juv			1-Bas		
2nd-yr	1-Bas		1-Alt				2-Bas		2-Alt				
3rd-yr	2-Alt							Bas		Alt			
4th-yr	Alt							Bas		Alt			

Figure 1: Generalized representation of approximate molts and plumage sequences in male King Eider during the first four years of life. Note that dark gray represents the primary molt period, when individuals are typically in a transitional state between plumages. Abbreviations used are as follows: **Juv** (Juvenal plumage), **1-Bas** (First-basic), **1-Alt** (First-alternate), **2-Bas** (Second-basic), **2-Alt** (Second-alternate), **Alt** (Definitive alternate), and **Bas** (Definitive basic, or eclipse).

First-basic: A variable first-prebasic molt from juvenal to first-basic plumage is initiated in early fall (September) of the first calendar year and continues through October to November or, occasionally, December. During this molt, the head, neck, fore back, scapular, breast, flank, and tail feathers are variably replaced, with some individuals possibly molting all body and head feathers except for the wings (Suydam 2000). Once this first-prebasic molt has been completed, individuals in first-basic plumage can be easily aged by the distinct, but variable, white breast (Photos 1 & 9) that contrasts noticeably with the blackish body and dark head, especially in late winter or on particularly advanced individuals (Photo 10). The head is also variably speckled and mottled with brown, including a buffy line from the eye to the nape. Birds in this plumage often begin to exhibit the whitish patches on the sides of the rump that are so prominent in adult males (Photo 9), although these will be irregular and variable at this age. The blackish flanks contrast with the retained brownish feathers on the belly and under tail coverts (Photo 9), although this feature will not be visible on swimming birds, and some individuals even begin to show a suggestion of the unique modified, sail-like scapulars that are present in adult males (as seen on adult males in Photos 1 & 5).

The olive-gray bill gradually reddens and the yellowish-orange frontal shield enlarges and brightens during the late fall and winter, although the size of the frontal shield is still much reduced from what is shown in adult males. The presence of a developing, distinctive orange frontal shield and reddish bill can be used to differentiate immature King Eider from immature Common Eider from first-basic plumage onwards (Lewington *et al.* 1991). Although the body and head feathers have been molted, the brown juvenal wing feathers are retained and birds in their first winter will still exhibit uniformly brown wings when in flight. This feature can be used to

eliminate any potential confusion that may arise between birds in their first winter and superficially similar eclipse-plumaged males, which show an adult-type wing pattern with bold, oval-shaped white patches on the upper wing coverts. The overall appearance of first-basic individuals is of a dark-bodied, dark-headed, white-breasted bird with a contrasting bright yellow-orange bill and developing frontal shield.

First-alternate:

First-basic males undergo a highly variable first-prealternate molt in late winter or early spring of the second calendar-year to acquire a briefly-held first-alternate plumage that is retained into early summer. Individual variation in extent of this molt ranges from only the head feathers to virtually all body and head feathers. As a result of this wide variation, first-alternate plumage is also highly variable and difficult to characterize. Individuals that have molted only the head feathers resemble advanced first-basic plumage (Photo 10), but show a mottled grayish-brown crown and nape contrasting with the somewhat browner cheeks and grayish-buff throat and chin. As well, such individuals tend to show a variable semi-collar of mixed black and white feathers on the upper breast. More advanced individuals that have molted most of the body and head feathers tend to have a grayer crown and nape, almost pure white throat, breast, and collar, and a moderately distinct black “V” on the chin. The presence of a white collar in this age class is a highly diagnostic field mark (Suydam 2000). As well, such individuals have a variable (often extensive) amount of fresh black feathering on the back, scapulars, rump, and sides and show fairly bold, oval-shaped white patches on the sides of the rump. Particularly advanced individuals in first-alternate plumage even begin to acquire a greenish wash to the whitish cheeks, as is shown in definitive alternate (adult breeding) plumage. This plumage is easily distinguished from similar-plumaged Common Eider by the colour of the bill and frontal shield as well as the lack of white on the scapulars.

Second-basic: Following a complete second-prebasic molt in the summer and early fall of their second calendar-year, males acquire a briefly-held second-basic plumage that is retained into the late fall. Males in second-basic plumage are characterized by a very dark blackish-brown crown and nape that contrast with the paler grayish or grayish-buff throat and chin and buffy-brown cheeks, although the face and head pattern is variable to some extent. The paler cheeks also contrast with a dark blackish area along the rear edge of the frontal shield and below the eye, as can be seen in the individual in Photo 11. The back, scapulars, rump, and sides are dark blackish to blackish-brown, with variable whitish and buffy-brown mottling on the breast. Individuals in this plumage often begin to develop the white patches on the upper wing coverts, although these patches, when present, are noticeably less extensive than in adult male (and are often confined only to the median upper wing coverts). The bill and frontal shield continue to brighten and, in

the case of the frontal shield, enlarge from what is shown in first-year birds but still do not reach the brightness or extent of that shown in adult males.

Second-alternate: Individuals moult into this plumage in the fall of their second calendar-year during a second-prealternate molt and retain it into the summer of their third calendar-year, at which time they moult into an adult-like definitive basic (eclipse) plumage. This plumage is very similar to definitive alternate (adult breeding) male, although most second-alternate males in fresh fall plumage have variable, sometimes heavy, dusky to blackish flecking throughout the head and face (Photos 12 & 13) that is typically worn away by late winter (Photos 14 and 15). Additionally, the white patch on the upper wing coverts is irregular and often mottled, and the orange frontal shield is not yet fully developed (Photos 9, 10 & 11). After this plumage, all subsequent plumages will be indistinguishable from adult.



Photo 8: First-fall male in early winter, molting from juvenal to first-basic plumage. Head and body are mottled brown in fall and early winter (retained from juvenal plumage), contrasting with the developing bright yellow to yellowish-orange frontal shield. Notice the appearance of some black feathers on the flanks and upperparts; by late winter most of the brown body feathers will be replaced by sooty-black. Photographed on Lake Minnewanka, Banff National Park, Alberta on December 25, 2005 [Royce Howland].



Photo 9: First-basic male in its first spring (second calendar-year). Blackish feathering has largely replaced the brownish juvenal body plumage, except for the belly (notice the contrast here). The breast gradually becomes whitish over the first winter and variable, adult-like whitish patches on the sides of the rump often begin to appear. The bill continues to redden and the frontal shield brighten and enlarge from what is shown earlier in the winter (see Photo 8). Compare to similar individual in Photo 1, as well as to eclipse males in Photos 4 & 5. Photographed in Aberdeenshire, Scotland on May 8, 2005 [Hugh Adlesee].



Photo 10: First-basic male in late winter/early spring (second calendar-year). Similar to Photo 6 but slightly more advanced (despite earlier date). Notice how the breast is often almost wholly whitish by late winter or spring, contrasting sharply with the blackish body plumage and dark head. Compare to similar individual in Photo 1. Photographed in Grimsby, Ontario on March 21, 2005 [Karl Egressy].



Photo 11: Second-basic male moulting to second-alternate plumage during the fall of its second calendar-year. Similar to fresh second-alternate plumage (Photos 12 & 13), but the brown wash to the plumage (including the breast), dark brown on the face, reduced white patches on the upperwing coverts, and reduced orange frontal shield are suggestive of retained second-basic characteristics. Photographed in Grimsby, Ontario on November 11, 2004 [Brandon Holden].



Photo 12: Fresh-plumaged second-alternate male in fall of its second calendar-year. Similar to adult male in alternate plumage, but note the irregular shape and reduced size of the white patch on the upperwing coverts. As well, the dusky mottling over the face and head is indicative of this plumage. Photographed in Vancouver, B.C. on October 31, 2005 [Walter Ammann].



Photo 13: Fresh-plumaged second-alternate male in fall. Same individual as Photo 8. The irregular white wing patch is often visible when on the water. Note the extensive dusky mottling on the face, head, and breast. Photographed in Vancouver, B.C. on October 31, 2005 [Walter Ammann].



Photo 14: Worn second-alternate male in spring of its third calendar-year. Similar to Photo 8, but dusky mottling has worn off of the face and head, leaving a more typical adult appearance. Notice the irregular white patch on the upperwing coverts and somewhat reduced orange frontal shield (compared to adult). Photographed in Fanny Bay, Vancouver Island, B.C. on March 1, 2004 [Mike Yip].



Photo 15: Worn second-alternate male in spring. Same bird as Photo 10. The reduced frontal shield is particularly evident here. Although not visible in this photo, the irregular upperwing patch can often be seen on swimming birds (see Photo 9). Photographed in Fanny Bay, Vancouver Island, B.C. on March 1, 2004 [Mike Yip].

Occurrence:

King Eider is a very rare species on marine waters along the coast of British Columbia, primarily from late fall through spring (Figure 2). It has been recorded on 30 occasions in B.C. as of 2006 (Campbell *et al.* 1990, Dorsey 1996, Plath 2000), with the frequency of observations increasing in recent years as a result of better coverage by birders and a more thorough understanding of the species' identification and status. Records of this species span the entire length of the British Columbia coast, including the Queen Charlotte Islands, Vancouver Island, the northern mainland coast (Port Edward), and the southern mainland coast (Vancouver, Sunshine Coast). Although the heavily-birded Vancouver area has been host to more King Eiders than any other region of the province ($n = 11$), many recent records have come from Vancouver Island ($n = 10$) and the Queen Charlotte Islands ($n = 6$) as birders in these areas continue to scrutinize the large scoter flocks that occur in these areas. Although unrecorded from the interior of B.C., the presence of inland records elsewhere across North America (including a recent winter record from Alberta), as well as a record of the ecologically similar Common Eider from the central interior of B.C., suggests that there is a potential for this species to occur away from the coast.

This is a species that could potentially occur at any time of year in B.C. The primary occurrence period for King Eider along the coast of B.C. is from late October or early November to mid-May, with peak occurrence between late November and early April, although there are several records

during the summer and early fall (June to September) (Figure 2). Spring records are likely indicative of both spring staging with other sea ducks (such as along the east coast of Vancouver Island in response to spawning herring) as well as the arrival of spring migrants from wintering grounds further south along the Pacific coast of North America. King Eiders occurring along the B.C. coast tend to remain for extended periods of time (average stay = 43.4 days, max stay = 185 days), indicating that these birds are truly wintering or staging in the area as opposed to merely passing through. Long-staying birds in B.C. often associate with flocks containing Surf Scoter and/or White-winged Scoter, although some individuals have been observed within the vicinity of large scoter flocks but not necessarily associating with them (J. Fenneman, pers. comm.). Similarities in wintering ecology, habitat, and food habits, as well as a general tendency towards flocking behaviour in both King Eider and scoters, likely account for this relationship.

This species is almost always found as single individuals in our region, although there are several records of 2 birds together from southern Vancouver Island (see Table 1, items 14 & 23) and the Queen Charlotte Islands (Table 1, item 22). The majority of reports in B.C. are of males (n = 16), suggesting that the less obvious females are potentially being overlooked along our coast. Conversely, this may be representative of differential wintering areas of the two sexes along the Pacific coast, although the presence of at least some records of females in B.C. (n = 12) indicates that that sex is represented here as well. Curiously, all records of King Eider from the Queen Charlotte Islands and the northern mainland coast are of individuals identified as females, providing tentative support for the theory of differential wintering areas of the two sexes. Furthermore, many of the males recorded from B.C. have been in immature, sub-adult, or near-adult plumage (n = 11), possibly suggesting that full adult birds tend to remain further north within the species' normal Alaskan wintering range while immature birds occur more widely along the Pacific coast in sub-optimal habitats.

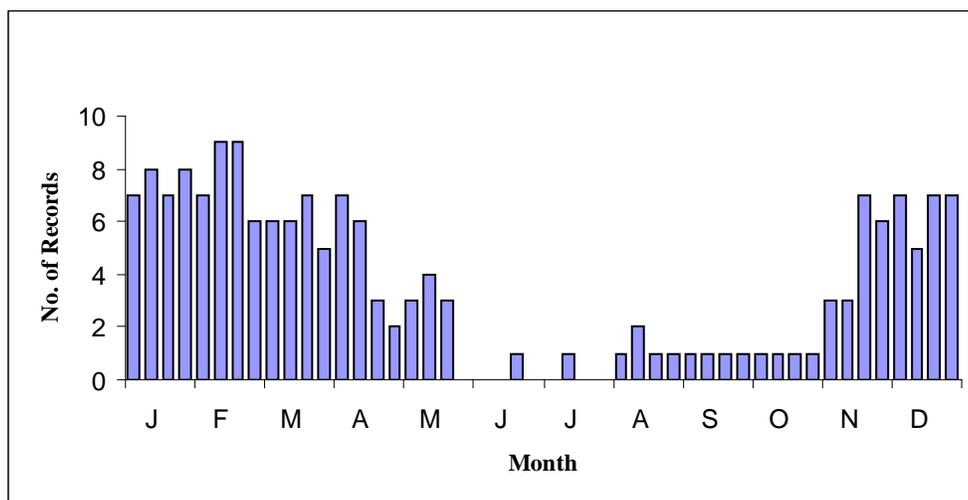


Figure 2: Temporal distribution of King Eider records in British Columbia

Table 1: British Columbia Records of King Eider:

- 1.(1) male October 18, 1938: Arthur Peake (MVZ 99553: specimen) Hardy Bay (Brooks 1942)
- 2.(1) female January 11, 1942: E. B. Cooke (RBCM 8966: specimen) Sooke Harbour (Carl 1942)
- 3.(1) female December 4, 1945: (RBCM 10226: specimen) Masset, QCI (Campbell *et al.* 1990)
- 4.(1) female December 15, 1971 - January 16, 1972: George Sirk, mobs: Queen Charlotte, QCI (Sirk 1972, Crowell and Nehls 1972, Campbell *et al.* 1990)
- 5.(1) immature male November 17, 1973- May 20, 1974: (photo: RBCM: 326) Pt. Grey - Stanley Park, Vancouver (Campbell *et al.* 1990)
- 6.(1) adult female February 22, 1975: Chatham Sound, Port Edward (Campbell *et al.* 1990)
- 7.(1) female May 14, 1977: Sandspit, QCI (Campbell *et al.* 1990)
- 8.(1) immature male August 7- October 9, 1982: BMK, RWP, mobs (photo: RBCM: 988) Iona Island South Jetty, Richmond (Campbell 1982, Campbell *et al.* 1990)
- 9.(1) adult female November 17, 1983-February 19, 1984: Bob Emery, mobs (photo: RBCM: 1111) Stanley Park, Vancouver (Campbell *et al.* 1990)
- 10.(2) adult females February 6, 1984: David Fraser, and other observers: Fulford Harbor, Saltspring Island (Mattocks 1984, Toochin *et al.* 2013)
- 11.(1) adult male November 4, 1984-April 6, 1985: BMK, mobs (photo: RBCM: 1196 & 1089) Stanley Park-West Van- Deep Cove (Campbell *et al.* 1990)
- 12.(1) adult female November 17, 1985-April 9, 1986: JH, mobs: Stanley Park, Vancouver (Campbell *et al.* 1990)
- 13.(1) adult male April 6-May 23, 1986: Stanley Park, Vancouver (Campbell *et al.* 1990, Toochin *et al.* 2013)
- 14.(1) female July 14-15, 1989: M. Hearne, mobs: Cape Eden Shaw near Dixon Entrance, QCI (Toochin *et al.* 2013)
- 15.(1) adult female January 19-February 19, 1991: DL, Ann-Marie Neugebauer, mobs: Iona Island South Jetty, Richmond (Dorsey 1996, Toochin 2012)
- 16.(1) adult female January 29, 1992: Rick Toochin: Iona Island South Jetty, Richmond (Toochin *et al.* 2013)
- 17.(2) females January 8-15, 1994: Adrian Dorst, and other observers: (photo) off Tofino (Bowling 1994, Toochin *et al.* 2013)
- 18.(1) adult male June 20, 1995: Rick Toochin, Mitch Meredith: off Rafael Point, Flores Island (Toochin *et al.* 2013)
- 19.(1) near-adult male December 21, 1997-January 1, 1998: Mike Miller, mobs: (photo) Gartley Point, Royston (Bowling 1998, Toochin *et al.* 2013)
- 20.(1) adult male March 13- April 16, 1998: Rick Toochin, mobs: Iona Island South Jetty, Richmond (Plath 2000, Toochin *et al.* 2013)
- 21.(1) immature male January 20- March 10, 2005: Russ Tkachuk, mobs (photo) Roberts Creek, Sunshine Coast (Toochin *et al.* 2013)

- 22.(1) immature male April 1-13, 2000: Rick Toochin, mobs: Iona Island South Jetty, Richmond
(Toochin *et al.* 2013)
- 23.(2) female August 13, 2001: P. Hamel, mobs: Rose Spit, QCI (Toochin *et al.* 2013)
- 24.(1) near-adult male January 10-March 21, 2002: Patrick Fawkes, mobs (photo) Longbeak Spit, Denman Island (Cecile 2002, Toochin *et al.* 2013)
- 25.(1) female November 21, 2002: P. Hamel, mobs: Balance Rock near Skidegate
(Toochin *et al.* 2013)
- 26.(1) near-adult male May 6-17, 2003: Dale Whitmee, Guy Monty, and other observers (photo) Deep Bay (Cecile 2003, Toochin *et al.* 2013)
- 27.(1) immature male November 5, 2003-January 5, 2004: *fide Blake Bartzen* (photo) Deep Bay
(Toochin *et al.* 2013)
- 28.(2) immature male and female February 8, 2004: John Sprague, mobs: by sailboat 3-6 NM out of Sidney near Moresby Island (Toochin *et al.* 2013)
- 29.(1) near-adult male February 10-March 8, 2004: Jamie Fenneman, mobs (photo) Fanny Bay
(Cecile 2004, Toochin *et al.* 2013)
- (1) near adult March 20-March 22, 2004: Guy Monty, mobs (photo) Qualicum Beach
(Toochin *et al.* 2013)
- (1) near adult March 22-March 26, 2004: Guy Monty, mobs (photo) Parksville
(Toochin *et al.* 2013)
- (1) near adult March 27-April 3, 2004: Guy Monty, mobs (photo) French Creek
(Toochin *et al.* 2013)
- (1) near adult April 9-April 12, 2004: Ralph Hocken , mobs (photo) Lantzville
(Toochin *et al.* 2013)
- 30.(1) 1st year male March 20, 2005: Doug Brown: Gossell Creek, Gibsons
(Toochin *et al.* 2013)
- 31.(1) sub-adult male October 30-December 3, 2005: Bill Bodean, mobs (photo) Dundarave Pier– Stanley Park, Vancouver (Toochin 2012, Toochin *et al.* 2013)
- (1) near adult male April 11-15, 2006: Mark Wynja, mobs: Iona Island South Jetty Tip, Richmond (Toochin 2012, Toochin *et al.* 2013)
- 32.(1) 1st year male April 6, 2010: Guy Monty: Columbia Beach (Charlesworth 2010, Toochin *et al.* 2013)
- 33.(1) immature/ female October 3, 2010: Peter Hamel, Margo Hearne (photo) Naden Harbour, QCI (Toochin *et al.* 2013)
- 34.(1) immature male February 9-11, 2014: Russell Cannings, mobs (photo) Little Qualicum River Estuary, along Surfside Drive in Qualicum Beach (R. Cannings Pers. Comm.)

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