

Status and Occurrence of Blue-footed Booby (*Sula nebouxii*) in British Columbia.

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Introduction and Distribution

The Blue-footed Booby (*Sula nebouxii*) is an elegant seabird that is found in the tropical eastern Pacific Ocean along the coastlines of Central and South America, with colonies found on the Galapagos Islands, along the coastlines of Ecuador, and Peru in South America and in the Sea of Cortez in Mexico (Harrison 1983, Hamilton *et al.* 2007, Howell and Webb 2010). The timing of nesting colonies depends on the location (Harrison 1987). The species generally breeds from December through July on islands throughout this range (Peña 2009). Once breeding is finished birds disperse away from the breeding grounds along the Pacific coast of Mexico, with some birds moving up to the northern Baja where this species is rare (Howell and Webb 2010) and some moving south of breeding colonies along the Pacific Coast to central South America (Harrison 1987). This species generally feeds close to shore, even along tidelines of sandy beaches where water is less than 1 meter deep (Harrison 1983). There are two recognized subspecies of Blue-footed Booby with the subspecies *Sula nebouxii excisa* occurring on the Galápagos Islands, and the nominate subspecies *Sula nebouxii nebouxii* which occurs everywhere else throughout the species' wide range (Carboneras *et al.* 2014). The Blue-footed Booby is not an overly migratory species by nature, but has occasionally been known to travel great distances beyond their usual range (McCaskie 1970). In years where ocean temperatures fluctuate, this is especially true in El Niño-Southern Oscillation event years; the Blue-footed Booby disperses as far north as Southern California, where this species is a rare vagrant, mostly involving immature birds (Hamilton *et al.* 2007, Howell *et al.* 2014) and as far south as coastal areas of northern and central Chile (Harrison 1987).

The Blue-footed Booby is an accidental vagrant in North America anywhere away from Southern California (Hamilton *et al.* 2007, Tietz and McCaskie 2017). There are 3 accepted records for Oregon by the Oregon Bird Records Committee (OFO 2016). In Washington State, there are 2 accepted records of the Blue-footed Booby by the Washington Bird Records Committee (Wahl *et al.* 2005, WBRC 2016). The Blue-footed Booby is an accidental to casual vagrant in Arizona where there are several accepted state records by the Arizona Bird Records Committee (Monson and Phillips 1981, Rosenberg and Witzeman 1998). Other accidental records inland include 2 accepted records for Nevada by the Nevada Bird Records Committee (Meyers 2014), 1 accepted record for New Mexico from the New Mexico Bird Records Committee (NMOS 2017), and 2 accepted records for Texas by the Texas Bird Records Committee (Haynie 1994). The Blue-footed Booby is accidental in British Columbia with a recently photographed record from the north-eastern coast of the province (Towers *et al.* 2015) and a sight record from the waters of Hecate Strait (Toochin *et al.* 2014).

Identification and Similar Species

The identification of the Blue-footed Booby is covered in most standard North American Field Guides. This is a medium sized Booby species measuring 81 cm in length, with a wingspan of 158 cm, and weighs 1,550 grams (Sibley 2000, Dunn and Alderfer 2011). At all ages there are no other regularly occurring seabird species in British Columbia that would be confused with a Blue-footed Booby. The slightly smaller Brown Booby (*Sula leucogaster*) has occurred in British Columbia 11 times and should be ruled out if any Booby species is encountered in provincial waters (Toochin *et al.* 2015). For a detailed identification outlining differences of all potential Booby species in British Columbia it is recommended reading Harrison (1983) or Harrison (1987).

Adult Blue-footed Booby has dark blue legs and feet that are diagnostic (Sibley 2000). The head is mostly pale cinnamon-brown, with dense white streak and broad white patch at the junction of the hind-neck and mantle (Harrison 1983). The bill is gray and long, thick at the base and narrower at the tip (Dunn and Alderfer 2011). There is a bluish tinge at the base of the bill, where the bill meets the face, bordered by a dark line (Sibley 2000). The bluish colour extends around the bright yellow eyes (Dunn and Alderfer 2011). The chin and throat have less streaking that merges into the white fore-neck (Harrison 1983). The upper-parts are mostly pale cinnamon-brown with white tips forming scaly lines across the back and on the scapulars (Harrison 1983). The upper rump and lower upper-tail coverts are white with the mid rump area the same coloration as the back (Harrison 1983). The under-wings are white (Sibley 2000). The upper-wing is dark brown (Sibley 2000). The under-wing has a broad white rectangular axillary patch that is diagnostic in all ages (Harrison 1983). This patch extends narrowly across the under-wing as 2 white stripes; with the remainder of the wing brown (Harrison 1983). The tail is dark brown with the longest central tail feathers whitish (Harrison 1983).

Immature birds are similar to adults, but the head is a dull greyish-brown with faint whitish streaks merging into a whitish-grey chin and throat (Harrison 1983). The under-wing pattern is less defined (Harrison 1983).

Juvenile birds have a mostly dark brown head with a broad white patch at the junction of the hind-neck and mantle (Harrison 1983). The bill is an all dark-gray (Sibley 2000). The upper-parts are mainly brown with broad white tips forming a scaly pattern (Harrison 1983). The upper-tail coverts are white forming a narrow horseshoe over the rump (Harrison 1983). The under-parts are mostly white with a greyish-brown throat that stops, creating a clearly defined line across the upper breast (Harrison 1983). The upper-wing is similar to the adult, but is a duller darker brown (Harrison 1983). The under-wing pattern is similar to an adult, but is less defined

(Harrison 1983). The tail is blackish-brown with white shafts. The legs and feet are a dull greyish-blue (Sibley 2000).

Occurrence and Documentation

The Blue-footed Booby is an accidental vagrant to the pelagic waters of British Columbia with a well-documented sight record and a recent photographed record. The first record was a sight record that is likely valid of an immature bird found by J. and P. Hancock by boat on the east of Hecate Strait, in the Haida Gwaii area on July 15, 1995 (Toochin *et al.* 2014). The second record, but first confirmed record for British Columbia and Canada was a sub-adult bird found by a group of whale watchers and was photographed by Roy Atkins, Kyle Howard, Julian Sykes, and Geoff Dunstan on a whale watching trip with Stubbs Island Whale Watching in the waters of Weynton Passage on the north-eastern part of Vancouver Island on September 24, 2013 (Towers *et al.* 2015). At least 4 records of Brown Boobies have involved birds seen riding onboard ocean vessels while in British Columbia waters (Toochin *et al.* 2015) and it is always possible that the Blue-footed Booby could have been ship-assisted in some manner. Though this bird was not seen aboard a vessel it is always a possibility given the history that all Booby species have of riding aboard fishing vessels or sailing ships for extended periods of time (Byers 2007, Bailey 2013). In this case no observation was made and as a result the record stands on its own (Towers *et al.* 2015). Though it was pointed out the bird was not on any major shipping route by Towers *et al.* (2015), it is documented that Brown Boobies have come aboard fishing vessels and sat on them for some distances before departing (Morgan *et al.* 2009, Toochin *et al.* 2015). It thus remains unclear whether a Blue-footed Booby could have ended up in British Columbian waters under its own power.

The timing of both records fits well with when the Blue-footed Booby has occurred in Southern California. Along the west coast of California, in Northern California, there have been 14 accepted records of Blue-footed Boobies between Point St. George, near Crescent City and San Clemente Island (Hamilton *et al.* 2007, Tietz and McCaskie 2017). The bulk of records in California come from Southern California from the inland location of the Salton Sea, where they have been documented in past years, as summer and autumn irruptions of Blue-footed Boobies. These years included 1969 (with 32 birds), 1971 (with 48 birds), 1972 (with 45 birds), 1977 (with 11 birds) and 2009 (with 17 birds) (McCaskie 1970, Garrett and Dunn 1981, Roberson 1993, Patten *et al.* 2003, Hamilton *et al.* 2007; Johnson *et al.* 2012, Tietz and McCaskie 2017). This species has also far less frequently been found at inland lakes in the surrounding states. It is likely that northerly extra-limital records all involve the subspecies *S. n. nebouxii* which breeds to the south of the Salton Sea at the Sea of Cortez, Mexico (McCaskie 1970, Patten *et al.* 2003, Hamilton *et al.* 2007).

The 2013 record from Vancouver Island fits well into an overall irruption of Blue-footed Boobies that occurred in California and in some localized areas found surrounding states that summer and fall where this species dispersed well north of their normal range. The irruption of Blue-footed Booby into the waters and areas north of Baja Mexico in 2013 was a massive event that started early in the summer. The first extra-limital sighting occurred a few kilometres west of the southern California coast in July (Towers *et al.* 2015). By the month of August, there were single Blue-footed Boobies documented on lakes in New Mexico, Arizona, (Towers *et al.* 2015) and California (Towers *et al.* 2015). By September, there were Blue-footed Boobies appearing at several locations in California. By the end of the fall, there were more than 100 birds along the coast from the mouth of the Tijuana River to as far north as Samoa Beach, in northern coastal California (Towers *et al.* 2015) There was a mini-invasion of Blue-footed Boobies found inland including at the Salton Sea where 104 birds were counted on October 06, 2013 (Towers *et al.* 2015). The northerly irruption of Blue-footed Boobies in 2013 was likely caused by factors known to influence irruptions of several other seabird species. These factors include unusually high population densities due to one or more successful breeding seasons as well as reductions in prey availability (Koenig and Knops 2001, Newton 2008). Another important factor that has in the past been linked to past irruptions of Blue-footed Boobies north of their range involves higher than normal sea surface temperatures that can reduce the availability of food found within their local foraging ranges (Anderson 1989, Ancona *et al.* 2012). These periods of warm water are associated with El Niño-Southern Oscillation events and can affect the breeding success of adult Blue footed Boobies (Wingfield *et al.* 1999, Oro *et al.* 2010) as well as the survival and likely the movements of immature birds in search of food (Howell *et al.* 2014). This movement of immature birds is the most plausible explanation for why most historic records of Blue-footed Boobies documented north of their usual range have been young or immature birds (McCaskie 1970, Howell *et al.* 2014). It has been well documented that historical northerly irruptions of Blue-footed Boobies have occurred at times when sea surface temperatures were warmer than normal in the tropical Pacific Ocean (Gibbs *et al.* 1987). There is some evidence to suggest that a lack of available prey may have been a factor contributing to the northerly irruption of Blue-footed Boobies in 2013 as some birds were found in an emaciated condition and consequently captured and sent to rehabilitators (Towers *et al.* 2015). It is also possible that there were other environmental factors at work since 2013 was not a year that had an extreme El Niño-Southern Oscillation event (Towers *et al.* 2015).

The fact that there are so few records of the Blue-footed Booby north of California reflects how infrequent this species wanders this far north. It is very likely that it might take decades for another individual to wander into British Columbia waters again.



Figure 1: Record #2: Blue-footed Booby sub-adult found near Stubbs Island, in the waters of Weynton Passage Northeast Vancouver Island on September 24, 2013. 1st Confirmed Record for British Columbia and Canada. Photo © Roy Atkins (Speyside Wildlife (www.speysidewildlife.co.uk)).



Figure 2: Record #2: Blue-footed Booby sub-adult found near Stubbs Island, in the waters of Weynton Passage Northeast Vancouver Island on September 24, 2013. 1st Confirmed Record for British Columbia and Canada. Photo © Roy Atkins (www.speysidewildlife.co.uk).

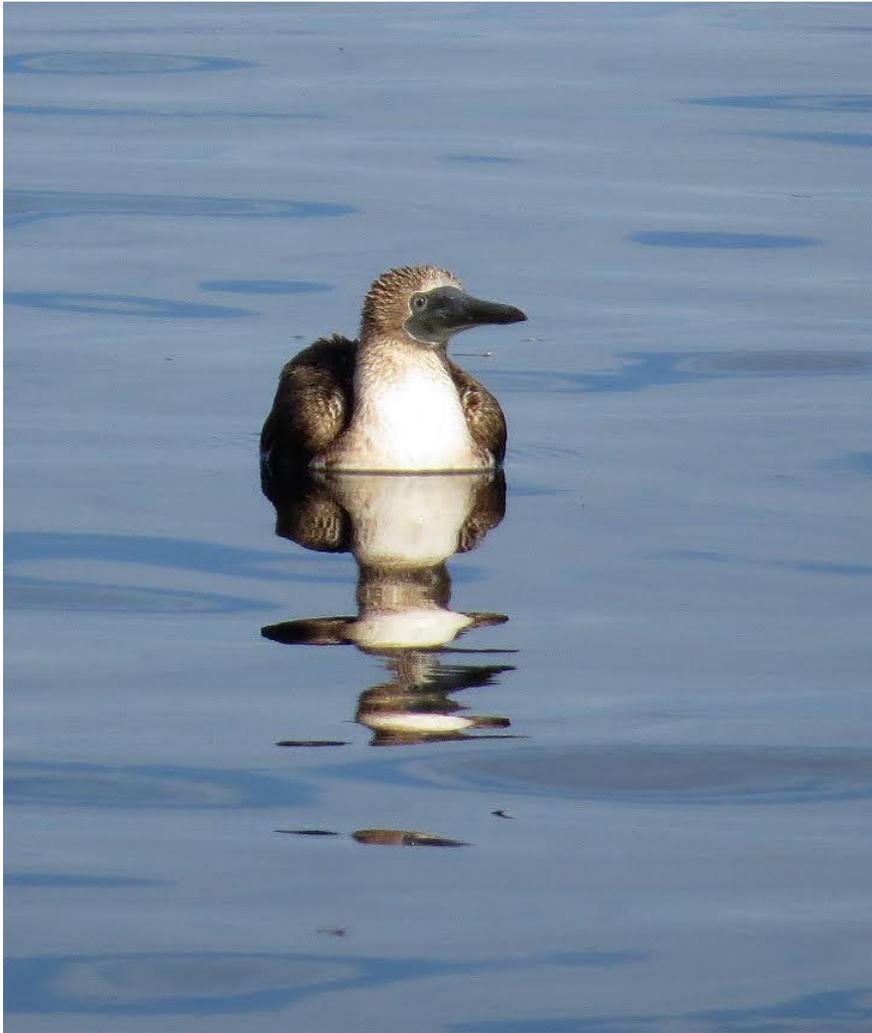


Figure 3: Record #2: Blue-footed Booby sub-adult found near Stubbs Island, in the waters of Weynton Passage Northeast Vancouver Island on September 24, 2013.

1st Confirmed Record for British Columbia and Canada. Photo © Roy Atkins (www.speysidewildlife.co.uk).

Table 1: Records of Blue-footed Booby for British Columbia:

- 1.(1) immature July 15, 1995: J. & P. Hancock: east of Hecate Strait, Haida Gwaii
(Davidson 1995, Tootchin *et al.* 2014)
- 2.(1) sub-adult September 24, 2013: Roy Atkins, Kyle Howard, Julian Sykes, Geoff Dunstan: in the waters of Weynton Passage (50°36.2' N, 126°48.3' W) on the northeastern part of Vancouver Island (Towers *et al.* 2015)

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