

# Brown Booby

(*Sula leucogaster*):

## New to Ontario

*Kayo J. Roy*



**Brown Booby in flight over the Niagara River on 9 October 2013. The Brown Booby is a large seabird with long, narrow, pointed wings and a bullet-shaped body. Photo: James M. Pawlicki**

### Circumstances

On 7 October 2013, James M. Pawlicki, a Buffalo area birder went birding, choosing to start his day at the tower in the downtown Erie Basin Marina that overlooks Lake Erie and a good portion of the harbour in Buffalo, Erie County, New York. The weather that day was nasty, with rain and very strong winds, remnants of a cold front that was passing through the area. From the tower, he began his study of gulls, cormorants and waterfowl. Before long, he texted to the WNYBIRDS listserv that he had just observed a Pomarine Jaeger (*Stercorarius pomarinus*) that he determined was a juvenile bird. At approximately 1240h, he had a brief view of a strange looking Sulidae that appeared to have a sharp



Figure 1. Brown Booby over the Niagara River off Buffalo, 7 October 2013. Photo: James M. Pawlicki

colour line between the breast and belly. Pawlicki concluded that given the poor light conditions he must have just been looking at an aberrant plumaged sub-adult Northern Gannet (*Morus bassanus*). Willie D'Anna and Betsy Potter arrived and he told them about his observation of this odd looking bird with this seeming demarcation line. The weather was becoming worse and was unquestionably less than optimal for viewing from the tower. Birding there became a challenge



Figure 2. Brown Booby on Donnelly's Breakwall in Buffalo on 9 October 2013. Photo: James M. Pawlicki

and the group all moved down to a more sheltered area at the base of the marina tower. After a short period of scoping the lake, Potter mentioned that she was seeing an interesting bird flying just beyond the southern extension of the Bird Island Pier breakwall. As the bird approached the observers, Pawlicki, in an incredibly excited state screamed out, "IT'S A BROWN BOOBY, IT'S A BROWN BOOBY, IT'S A BROWN BOOBY." (Figure 1). All previous Brown Booby sightings in New York State were from or near the coast of Long Island. This remarkable inland observation in western New York was truly astonishing. It was 1330h and Pawlicki had just encountered perhaps the rarest bird ever seen in western New York, at least in modern times.

It was also on this day (7 October) that Pawlicki first saw and photographed it perched on the Ontario side of the old International Railway Bridge that crosses the Niagara River just a short distance north of the Peace Bridge.

Weather conditions on this early October day were uncomfortable for birding, but in poor weather, that is when the expectation of finding an infrequent visiting gull species in the Niagara River is at its highest. In the late morning, it was raining with the temperatures at 13°C, relative humidity 93%, atmospheric pressure 100.6 kPa, winds 25-40 km/h gusting to 37-56 km/h from the southwest. By 1300h, with the rain continuing, the temperatures had dropped slightly to 11°C, relative humidity 72%, atmospheric pressure 100.6 kPa and winds 27-40 km/h with gusts increasing to 50-70 km/h from the southwest. On 7 October

2013, the total rainfall recorded for the day was 21.1 mm in the area of the Erie Basin Marina (*vide* Anthony Ansuini, United States National Weather Service, Buffalo, New York).

This adult female Brown Booby was last seen in the Fort Erie, Ontario, area on 21 October. It, however, remained in the Buffalo area until 24 October and was observed there every day except 23 October. The bird spent most of those 17 days in the United States waters of Lake Erie. Its favourite rest area was at the northwest tip of Donnelly's Breakwall, a long concrete partition 0.93 km offshore from the Erie Basin Marina (Figures 2 and 3) where the bird spent considerable time resting with a large number of Double-crested Cormorants (*Phalacrocorax auritus*). The bird was frequently visible from the viewing tower located at the marina while it was resting on the wall and when in flight over Lake Erie.

In the late afternoon, the Brown Booby could also be observed at its favourite evening roost site, the old deteriorating Horseshoe Reef Lighthouse structure in the Niagara River, just barely on the United States side of the international border (Figures 4 and 5). On a few occasions it was again observed on the International Railway Bridge.

Observers on the Canadian side at Mather Park in Fort Erie were at a distinct disadvantage in observing the bird. Telescopes were absolutely necessary in order that at least the bird's key features could be observed when it was on Donnelly's Breakwall (1.95 km distant) or on the Horseshoe Reef Lighthouse (1.41 km



Figure 3. Brown Booby on Donnelly's Breakwall in Buffalo on 9 October 2013. *Photo: Dominic Sherony*

distant). Fortunately, a number of birders on the Canadian side were able to observe the bird in flight over Ontario waters on the many occasions the bird flew out to feed in Lake Erie. The Brown Booby was also observed flying over Ontario waters on its return from visits to the railway bridge. The bird was seen clearly in Ontario when it circled widely around the deteriorating lighthouse on its way to roost there for the night on the base of the structure. It is estimated that some 700 birders visited the Buffalo/Fort Erie area to look for this rare seabird. Pawlicki lamented as he reflected back on

the day he found this extreme rarity that “the day was one of those days when reality doesn’t seem quite as real as it is.”

With no further reports or sightings after 24 October, the fate of this rare avian visitor to the Buffalo/Fort Erie area was of major interest and concern to many birders. One week later, on the morning of 31 October, Ken Burrell and a number of other Bird Studies Canada staff and volunteers were performing a lakewatch from the tip of Long Point, off Port Rowan, Ontario, some 120 km to the west of Buffalo/Fort Erie. To their utter amazement, they encountered and

Figures 4 and 5. Brown Booby at the Horseshoe Reef Lighthouse Buffalo NY., 10 October 2013.  
*Photos by Brandon R. Holden.*





Left: Figure 6. Brown Booby off the tip of Long Point on 31 October 2013. *Photo: Janice J. Chard*  
Right: Figure 7. Brown Booby on a sandbar off the tip of Long Point on 1 November 2013.  
*Photo: Kenneth G. Burrell*

photographed an adult female Brown Booby in flight over the tip (Figure 6). Early the next morning, on 1 November, the bird was photographed on a close-by sand bar (Figure 7) where it had joined several Double-crested Cormorants and a Ring-billed Gull (*Larus delawarensis*). The description of the bird clearly fit the Buffalo/Fort Erie bird and it was almost certainly the same individual.

On 1 November, I received a phone call from Michael Gelsing, a Buffalo resident who owns property at Mohawk Point along the Lake Erie shoreline at Lowbanks, Ontario. Gelsing told me that as he was leaving his cottage, he spotted a large dark bird on the stone covered ground directly across the road from his property. He was certain this bird was the Brown Booby. Lowbanks is



Figure 8. Brown Booby roosting on shoreline rocks in Lowbanks on 2 November 2013. *Photo: Kayo J. Roy*



Figure 9. The last place the Brown Booby was seen on the Lake Erie shore in Lowbanks, Ontario, on 2 November 2013. *Photo: Kayo J. Roy*

some 56 km east along the north shoreline of Lake Erie from Long Point, an easy return flight for a seabird.

Early the next morning, 2 November, Jean and Blayne Farnan, Robert Curry, Gerry Rising and I arrived at the cottage residences and easily found the bird in exactly the same location where it was seen the night before. The bird had not moved at all and was still hunkered down on the stone covered ground (Figure 8) directly across the road from 230 Mohawk Point Road, Lowbanks, Ontario. The bird was observed resting with its head mostly tucked under a wing or

along its back and was shivering continuously. Occasionally, it lifted its head to look around, but each time the head was up for only a few seconds as if it had no energy. While the bird seemed to be alert, it looked weak and appeared to be suffering. All five of us felt it was expiring and we needed to get it quickly to a rehabilitator. Just as I was contacting potential rehabilitators, a noisy vehicle passed by and startled the booby. It instantly leapt up to the top of the shoreline boulders (Figure 9), and moments later took flight out over Lake Erie.

The bird flew straight out over the lake, then veered right, flying southwest towards Mohawk Island or Rock Point Provincial Park. That ended any opportunity to capture the bird to get it to a rehabilitator. After observing the bird for some 65 minutes, we were understandably stunned and amazed to see it fly off, given that it appeared to be so ill. During the period of our observation, the sky was mostly cloudy and we experienced occasional light rain.

### **Description**

This last observation of the Brown Booby at point-blank range allowed for a detailed study of its plumage and structure. Its entire head, neck, upperparts, tail and upper breast were a chocolate brown colour with the head, neck and upper back being slightly darker. The balance of the underparts and the entire ventral area were pure white. The sharply contrasting demarcation separating the brown upper and white lower breast was obvious. There was absolutely no whitish colour on the bird's head. The eye was bluish with a yellow-green orbital ring. The bird's facial bare parts were a yellow-green colour that surrounded the dark-blue loreal patch. The very large bill was pale pink in colour shading to yellow-green towards the base (Figure 10). The legs and feet were bright yellow.

Fecal droppings deposited on the ground at the Lowbanks site were collected by Marcie Jacklin and sent to Agriculture Canada for mitochondrial DNA analysis that confirmed the identification of this adult female Brown Booby to be from the nominate subspecies *leucogaster* (Skevington *et al.* 2014).

In Ontario and in western New York State, a Brown Booby is unquestionably a mega rarity and totally unexpected at any time of the year. One might ask how a seabird from the Caribbean could possibly reach the eastern end of Lake Erie. Remnants of hurricanes will often displace seabirds and other bird species far inland to regions where they are normally not found. However, no hurricanes were reported along the southern Atlantic coast in the weeks preceding the bird's appearance in Buffalo Harbour. A low pressure system lasting for several days along with extremely strong winds could also relocate birds to far-away locations. In the days prior to the discovery of this Sulidae, a number of strong weather systems, possibly originating off the southeast coastline of the United States, moved through western New York and southern Ontario. This is more than likely how the Brown Booby found itself in western New York and Ontario.

This record of the Brown Booby is a first for Ontario, the Great Lakes area and also for upstate New York (Pawlicki 2014). The Ontario Bird Records Committee (OBRC) accepted the sighting (Holden 2014), which now joins only a handful of accepted inland records of the Brown Booby for all of North America. If accepted by the New York State Avian Records Committee (NYSARC), this observation will become the fourth confirmed record for the state. Three additional historical records along with five sightings from the mid-1970s and early 1990s from or near the coast of Long Island have not been adjudicated by NYSARC (Bull 1998).





Figure 10. Brown Booby photographed at close range in Lowbanks, Ontario on 2 November 2013.

*Photo: Robert Curry*

### **Vagrancy to Coastal Canada**

Brown Boobies have exhibited some vagrancy to the Canadian Atlantic and Pacific coasts in recent years, with more than a few observations reported from Newfoundland, Nova Scotia, New Brunswick and British Columbia. Here are the pertinent details:

#### **Newfoundland**

**18 July 2012.** Adult, photographed on a tour boat near St. Anthony, NL, found deceased the next day on rocks along the St. Anthony harbour entrance. Unpublished (Bruce Mactavish, pers. comm.).

**4 September 2013.** Immature, photographed on a seismic ship in the Northern Grand Banks, 300 km ESE of St. John's, NL. Unpublished (Bruce Mactavish, pers. comm.).

#### **Nova Scotia**

**28 July 1941.** Photographed standing on rocks, Blanche, NS (McLaren 2012).

**27 September 2008.** Single observer sighting, Prospect High Head, Halifax Regional Municipality, NS (McLaren 2012).

**1 August 2010.** Adult, photographed as it sat aboard a whale research sloop at The Gully near Sable Island, NS (McLaren 2012).

**29 October 2011.** Immature, photographed, found deceased at Cape Sable, Shelburne Co., NS (Mills 2012).

### **New Brunswick**

**20 May 2012.** Immature, photographed on a lobster fishing boat in the Grand Manan Basin, Bay of Fundy, NB. Unpublished (Stuart Tingley, pers. comm.)

**8 August 2013.** Adult, in flight past the Sea Watch Tours vessel 'Day's Catch' off White Head Island, Bay of Fundy, NB. Unpublished (Stuart Tingley, pers. comm.)

### **British Columbia**

**20-21 October 2008.** Adult female, photographed on a fishing vessel 32 km west of the south end of Dundas Island (~55.45° N, 131.47° W), towards the eastern end of Dixon Entrance, BC (Morgan *et al.* 2009).

**29 August 2009.** Adult, two sightings (likely the same individual) from a fishing vessel off Sheringham Point and off Tower Point, Witty's Lagoon Park, Metchosin, BC. (Charlesworth 2010, Toochin 2012).

**31 August 2009.** Adult, Otter Point, Sooke, BC (Toochin 2012)

**1 September 2009.** Adult sitting on buoy off Whiffin Spit, Sooke, BC (Toochin 2012).

**23-24 August 2013.** Photographed on a commercial fishing vessel in Hecate Strait along the northwest BC coast off Queen Charlotte Island (BC Bird Alert Blog: accessed 25 August 2013).

**4 September 2013.** Adult female, photographed, 20 nautical miles west of the southern tip of Nootka Sound, BC. (BC Bird Alert Blog: accessed 6 September 2013).

**12-13 November 2013.** Adult female, photographed on a commercial fishing vessel off Ucluelet at the Nitnat outflow, north-east of Port Renfrew, BC (BC Bird Alert Blog: accessed 15 November 2013).

## **Subspecies**

There are four recognized subspecies of the Brown Booby that vary in appearance by location (Schreiber and Norton, 2002):

- *Sula l. leucogaster* (Boddaert 1783) lives along the Atlantic coast from the Caribbean north to the Bahamas, Bermuda, the coasts of the Gulf of Mexico and Central America and east to the Cape Verde Islands;
- *S. l. plotus* (Forster 1844) inhabits the north and south Pacific Ocean (including the Hawaiian Islands), the Indian Ocean and adjacent seas off northwest and northeast Australia, the Red Sea and the Gulf of Aden;
- *S. l. brewsteri* (Goss 1888) is located along the Gulf of California, and off the west coast of Mexico (including Clipperton and the Revillagigedo Islands); and
- *S. l. etesiaca* (Thayer and Bangs 1905) is found along the Pacific Coast south from Honduras and Costa Rica to Panama and Colombia.

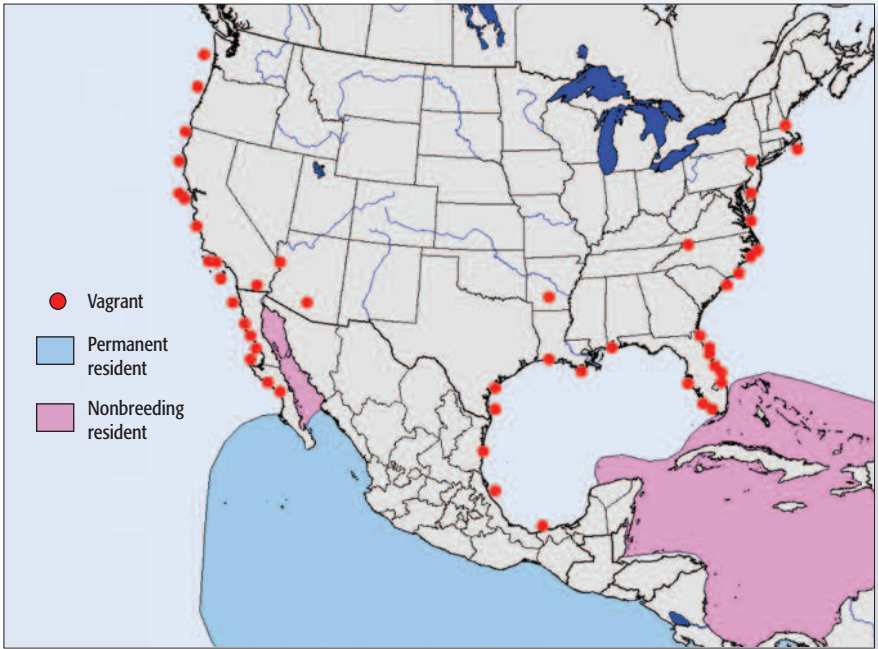


Figure 11. Map of Brown Booby range and extralimital occurrences to 2003.

Created by Terry L. Sohl, with data from NatureServe (Ridgely et al. 2003).

### Distribution and Range

The Brown Booby is a common, widespread seabird found in tropical waters throughout the world. The distribution is described as pantropical, between latitudes 30 ° N and 30 ° S, though it extends to about 34 ° S in the central Pacific. In the United States, this subtropical seabird can be sporadically found in Florida (frequently near the Dry Tortugas), but in recent years, becoming regular and expanding along the Atlantic Coast to Maine, irregularly along the Gulf Coast and increasing on the Pacific Coast from California to Oregon and Washington. Observations of the Brown Booby along the United States Atlantic and Pacific coasts have increased noticeably as illustrated above (Figure 11).

### Inland Sightings in North America

Given that the Brown Booby is strictly a seabird species, reports of inland observations in North America are enormously rare. One exception, however, is the Salton Sea, a shallow, saline lake located predominantly in the Imperial and Coachella Valleys of southeast California. Since 1966, numerous records of the Brown Booby have been documented. They reach the Salton Sea from the Gulf of California, not the Pacific Ocean, a distance of some 225-240 km (Guy McCaskie, pers. comm.).

While this 2003 map pinpoints five of the accepted inland locations across the United States where Brown Booby sightings have occurred, there have been a number of other more recent, well documented and photographed inland observations that are included here:

## California

**20 September 1946.** First inland sighting, a hatch-year male collected at the Imperial Dam on the Colorado River, Imperial County (Hamilton *et al.* 2007, Dunn 1988).

**28 July-13 August 1966.** Hatch-year, the first of numerous single and multiple sightings to follow over the years, found at the north end of the Salton Sea (Hamilton *et al.* 2007).

## Virginia

**4-28 October 2008.** Adult female, first and only inland sighting, photographed, Clayton Lake, Radford, Pulaski County, Virginia (Ealding 2012).

## New Jersey

**29 July-1 August 2012.** Adult female, first and only inland sighting, photographed, White Lake Wildlife Management Area, near Hardwick, Warren County, New Jersey (Boyle *et al.* 2013).

## Arkansas

**9-21 August 2012.** Adult female, photographed, Lake Norrell near Benton, Saline County, Arkansas (Arkansas Audubon Society 2013).

**26 August 2012.** Immature, photographed, Lake Hamilton, Garland County near Hot Springs, Arkansas (Arkansas Audubon Society 2013)

## Texas

**7 July 2012.** Adult, photographed, Lake Sam Rayburn near Powell Park, Broadus, San Augustine County, Texas (Lockwood and Freeman 2014).

**25 August - 3 September 2012.** Adult female, in flight over dam at Canyon Lake, 20 miles (32 km) north of New Braunfels, Comal County, Texas (Lockwood and Freeman 2014).

## Arizona

**13-14 August 1943.** First state record, immature, photographed, Bill Williams Arm, Havasu Lake, Havasu Lake National Wildlife Refuge, in both Mohave and Yuma Counties, Arizona (Monson 1946).

**11 August 2010.** Martinez Lake north of Yuma, Yuma County, AZ. ([abc.azfoABCReports\\_Public\\_View\\_list.aspx.org/ABCVote/](http://abc.azfoABCReports_Public_View_list.aspx.org/ABCVote/)).

**30 August 2010.** Immature, Rio Salado Habitat Restoration Area, Phoenix, Maricopa County, AZ. Injured and had to be euthanized, specimen at University of Arizona. This record has not been reviewed by the Arizona Bird Committee (David Vander Pluym, pers. comm.). ([http://azfo.org/ASPreports/speciesView\\_list.aspx](http://azfo.org/ASPreports/speciesView_list.aspx))

**5-14 August 2013.** The documentation for several individuals observed at Imperial Dam, Yuma, Lake Havasu and Lake Havasu City are still to be adjudicated by the Arizona Bird Committee (David Vander Pluym, pers. comm.). ([abc.azfoABCReports\\_Public\\_View\\_list.aspx.org/ABCVote/](http://abc.azfoABCReports_Public_View_list.aspx.org/ABCVote/)).

## Nevada

**27 August-5 December 1971.** Two birds, an adult and an immature, sketches made by C.S. Lawson of both birds, Las Vegas Bay, Lake Mead, Clark County, Nevada (Lawson 1973).

**16-17 February 2014.** Immature, photographed, (believed to be the same individual that spent the winter at Lake Havasu, Arizona), Cottonwood Cove, Lake Mohave, east of Searchlight, Clark County, Nevada. Unpublished (Martin Meyers, pers. comm.).

## Nebraska

**28 - 30 June 2014.** Adult male, nominate *S.l. leucogaster*, photographed, Hansen Lake, Omaha, Sarpy County, Nebraska (Swick 2014) Unpublished, pending records committee adjudication.

## Ecology

The bird's English name, Brown Booby, is a corruption of the Spanish word *Bobo*, meaning stupid, fool or simpleton, and is derived from the fact that these birds have little or no fear of humans. Centuries ago, hungry sailors gave them this name because they would land on ships and easily provide them with a meal (Koch 2012). The species name, *leucogaster*, meaning white stomach, is a reference to its striking white lower breast and belly which are sharply demarcated from the brown upper breast, body and head (Nellis 2001, Nelson 2005).

The Brown Booby is strictly marine and does not need to roost on land at night. It generally feeds in inshore waters, its diet is comprised mainly of flying fish and squid but also some halfbeak (*Hemiramphus*), mullet (*Mugil*) and anchovy (*Engraulis*) (del Hoyo *et al.* 1992). In the Atlantic and Caribbean, the species often feeds near shore or in bays, but it can remain inland feeding in fresh water for months (Bourne 1955, Dorward 1962). The Brown Booby can feed in all kinds of weather including small gales (Palmer 1962). The bird plummet dives from 1-15 meters above the ocean surface or makes shallow dives at low angles to the water skimming the surface depending on the depth of food. The bird may just barely lift off the water before plunging again if food is schooled at or near the surface (Palmer 1962, Diamond 1978, Yoda and Kohno 2008). This technique is often called "plunge fishing." Breeding is seasonal in some areas but elsewhere it breeds opportunistically or more or less

continuously. Nests are usually built on the ground in the midst of vegetation on rocky islands or coral atolls (del Hoyo *et al.* 1992).

The Brown Booby may or may not migrate; little is known of its movements outside breeding seasons owing to lack of at sea and banding data (Schreiber and Norton 2002). Adults may disperse over a wider area than juveniles. Of 3,000 banded at Johnson Island, one was found at Pearl and Hermes Reef, northwestern Hawaiian Island (800 km to the north), one at Jarvis (1000 km to the south) and one at New Hebrides (2900 km to the southwest). Young banded in the U. S. Virgin Islands have been recovered as fledglings and subadults in Puerto Rico, the Dominican Republic, Cuba and Venezuela. One adult was found in Bermuda (Schreiber and Norton 2002).

## Population and Lifespan

The global population of Brown Booby is estimated to number >200,000 individuals. World-wide, the species has declined dramatically over the past 200 years and may only be 10% of historic levels. While the species has an extremely large range and despite the fact that the population trend appears to still be decreasing, the decline is not believed to be sufficiently rapid to approach the thresholds for "vulnerable" under the population trend criterion (BirdLife International 2014). The lifespan of the Brown Booby is not well established owing to the lack of long-term banding studies. The oldest known bird lived 26 plus years, however it was banded as an adult (Simmons 1967).

## Acknowledgments

The help and generosity extended by many bird enthusiasts in the preparation of this paper was greatly appreciated. I am thankful to Ken Burrell, Janice Chard, Bob Curry, Brandon Holden, Jim Pawlicki and Dominic Sherony, all of whom instantly allowed me the use of their excellent photo images of the bird. I am grateful to Bill Boyle (New Jersey), Dick Cannings and Mike Toochn (British Columbia), Willie D'Anna and Gary Chapin (New York), Wendy Ealding and Wesley Brown (Virginia), Bruce Mactavish (Newfoundland), Guy McCaskie (California and the Salton Sea), Ian McLaren (Nova Scotia), Martin Meyers (Nevada), Stuart Tingley (New Brunswick) and David Vander Pluym (Arizona), for substantiating the details and/or providing references of inland sightings of Brown Booby in their respective areas. I thank Mike Burrell, who made available the distance data from the Erie Basin Marina and Fort Erie to Donnelley's Breakwall and to the Horseshoe Reef Lighthouse. The assistance of Anthony Ansuini of the United States National Weather Service in Buffalo was appreciated for furnishing all the required weather data. I thank and am grateful to Terry Sohl, research physical scientist with the United States Geological Survey for allowing me to include his map of Brown Booby observations in North America. I thank Jim Pawlicki for his helpful comments regarding the bird's presence in western New York. Finally, I want to express my gratitude to Bob Curry for his suggested style changes and I am indebted to Ron Pittaway for his judicious review of an earlier draft of this article and thank him for his constructive and positive comments.

## Literature Cited

- Arkansas Audubon Society.** 2013. Arkansas bird records database. Version 13.1. Retrieved online from [http://www.arbirds.org.aas\\_dbase.html](http://www.arbirds.org.aas_dbase.html)
- BirdLife International.** 2014. Species fact-sheet: *Sula leucogaster*. Retrieved online from <http://www.birdlife.org>
- Boddaert, P.** 1783. Table des planches enluminées d'histoire naturelle de m. d'Aubenton: avec les denominations de m.m. de Buffon, Brisson, Edwards, Linnæus et Latham, précédée d'une notice des principaux ouvrages zoologiques enluminés. [s.n.], Utrecht, xv+58+9 pp.
- Bourne, W.R.P.** 1955. Birds of the Cape Verde Islands. *Ibis* 97:508-556.
- Boyle, B., T. Boyle, P. Guris and T. Reid.** 2013. New Jersey Bird Records Committee Annual Report 2013. Retrieved online from <http://www.njbrc.net>
- Bull, J.L.** 1998. Bull's Birds of New York State. (E. Levine, ed.). Cornell University Press, Ithaca, New York. 114 pp.
- Charlesworth, C.** 2010. Fall Season – British Columbia. *North American Birds* 64:100-103.
- del Hoyo, J., A. Elliott and J. Sargatal.** 1992. Handbook of the Birds of the World, Volume 1: Ostrich to Ducks. Lynx Edicions, Barcelona, Spain.
- Diamond, A.W.** 1978. Population size and feeding strategies in tropical seabirds. *American Naturalist* 112:215-223.
- Dorward, D.F.** 1962. Comparative biology of the White and Brown Booby *Sula* spp. at Ascension. *Ibis* 103b:174-219.
- Dunn, J.L.** 1988. Tenth Report of the California Bird Records Committee. *Western Birds* 19:129-163.

**Ealding, W.** 2012. Annual report of the Virginia Avian Records Committee for 2011. *The Raven* 83(1):32-35.

**Forster, J.R.** 1844. *Descriptiones Animalium quae in itinere ad maris australis terras per annos 1772, 1773 et 1774 suscepto collegit observavit et delineavit Joannes Reinoldus Forster* (H. Lichtenstein, Ed.). *Academia Litterarum Regia*, Berlin.

**Goss, N.S.** 1888. New and rare birds found breeding on the San Pedro Martir Isle. *Auk* 5:240-244.

**Hamilton, R.A., M.A. Patten and R.A.**

**Erickson.** 2007. (Eds), *Rare Birds of California*. Western Field Ornithologists, Camarillo, California.

**Holden, B.R.** 2014. Ontario Bird Records Committee Report for 2013. *Ontario Birds* 32:54-81.

**Koch, A.** 2009. Stray Brown Booby makes rare appearance at White Lake in Blairstown. Web blog entry for 5 August 2012. Available at [http://www.lehighvalleylive.com/sports/index.ssf/2012/08/stray\\_brown\\_booby\\_make\\_s\\_rare\\_a.html](http://www.lehighvalleylive.com/sports/index.ssf/2012/08/stray_brown_booby_make_s_rare_a.html) Accessed 20 June 2014.

**Lawson, C.S.** 1973. Notes on Pelecaniformes in Nevada. *Western Birds* 4:23-30.

**Lockwood, M.W. and B. Freeman.** 2014. *TOS Handbook of Texas Birds*, second edition, Texas A&M University Press, College Station, Texas.

**McLaren, I.A.** 2012. *All the Birds of Nova Scotia: Status and Critical Identification*. Gaspereau, Kentville, Nova Scotia. 247 pp.

**Mills, E.** 2012. Autumn Bird Reports: Tubenoses through Cormorants. *Nova Scotia Birds* 54(1):15-16. Accessed at <http://www.nsbirdsociety.ca/Publications/Newsletters/Vol%2054,%20number%201%20Winter%202012.pdf>

**EAGLE OPTICS CANADA**

**Great optics for less than you'd expect!**

**GOLDEN EAGLE 8x42 \$789 CAN MSRP\***

**RANGER 8x42 \$459 CAN MSRP\***

**SHRIKE 8x42 \$179 CAN MSRP\***

To view Eagle Optics products visit your local Wild Birds Unlimited

**eagleoptics.ca**

\*Dealer may sell for less.  
Photo by Brandon Holden | peregrineprints.com

**Monson, G.** 1946. Brewster's Booby in Arizona. *Auk* 63:96.

**Morgan, K., S. Wallace and G. Krause.** 2009. First record of a Brown Booby in British Columbia, Canada. *British Columbia Birds* 19:13-15.

**Nellis, D.W.** 2001. *Common Coastal Birds of Florida and the Caribbean*. Pineapple Press Inc. Sarasota, Florida.

**Nelson, B.** 2005. *Pelicans, Cormorants and their Relatives: Pelecanidae, Sulidae, Phalacrocoracidae, Anhingidae, Fregaidae, Phaethontidae*. Oxford University Press, Oxford.

**Palmer, R.S.** 1962. *Handbook of North American Birds*. Volume 1. Loons through flamingos. Yale University Press, New Haven, Connecticut.

**Pawlicki, J.** 2014. Brown Booby (*Sula leucogaster*) at Buffalo Harbor: First record for upstate New York and the Great Lakes. *Kingbird* 64(1):9-13.

**Ridgely, R.S., T.F. Allnutt, T. Brooks, D.K. McNicol, D.W. Mehlman, B.E. Young, and J.R. Zook.** 2003. *Digital Distribution Maps of the Birds of the Western Hemisphere*, version 1.0. NatureServe, Arlington, Virginia, USA.

**Schreiber, E.A. and R.L. Norton.** 2002. Brown Booby (*Sula leucogaster*), *The Birds of North America*, (A. Poole, Ed.). Ithaca, NY: Cornell Lab of Ornithology. Retrieved online from <http://bna.birds.cornell.edu/bna/species/649>

**Skevington, J.H., J. Pawlicki, S. Kelso, K.C.R. Kerr and M. Jacklin.** 2014 (*submitted*). Pinpointing the origin of the Great Lakes' first Brown Booby (Aves: *Sula leucogaster*). *Canadian Field-Naturalist*.

**Simmons, K.E.L.** 1967. Ecological adaptations in the life history of the Brown Booby on Ascension Island. *Ibis* 103b:174-219.

**Swick, N.** 2014. #ABARare - Brown Booby - Nebraska. ABA blog for 5 July 2014. [http://blog.aba.org/2014/07/abarare-brown-booby-nebraska.html?utm\\_source=rss&utm\\_medium=rss&utm\\_campaign=abarare-brown-booby-nebraska](http://blog.aba.org/2014/07/abarare-brown-booby-nebraska.html?utm_source=rss&utm_medium=rss&utm_campaign=abarare-brown-booby-nebraska) <[http://blog.aba.org/2014/07/abarare-brown-booby-nebraska.html?utm\\_source=rss&utm\\_medium=rss&utm\\_campaign=abarare-brown-booby-nebraska](http://blog.aba.org/2014/07/abarare-brown-booby-nebraska.html?utm_source=rss&utm_medium=rss&utm_campaign=abarare-brown-booby-nebraska)> Accessed 5 July 2014.

**Thayer, J.E. and O. Bangs.** 1905. The vertebrata of Gorgona Island, Columbia (Class: Aves). *Bulletin of the Museum of Comparative Zoology* 46(5):87-102.

**Toochin, R.** 2012. Rare birds of the Juan de Fuca Strait checklist area (British Columbia). Revised edition. Retrieved online from <http://www.geog.ubc.ca/biodiversity/efouna/documents/BirdsRareJuandeFucaXZA.pdf>

**Yoda, K. and H. Kohno.** 2008. Plunging behaviour in chick-rearing Brown Boobies. *Ornithological Science*. 7(1):5-13.

---

*Kayo J. Roy*  
13 Kinsman Court  
Fonthill, ON L0S 1E3  
E-mail: [kayoroy@niagara.com](mailto:kayoroy@niagara.com)