



Oil and Hawaiian Seabirds

by DAVID CAMERON DUFFY¹ and LINDA ELLIOTT²

The Hawaiian archipelago supports 22 seabird species, with approximately six million breeding individuals and a total population of fifteen million (Harrison 1990). These birds are exposed to a wide array of threats, including human disturbance, habitat loss, predation from introduced land mammals, pollutants and accidental catch during fishery operations (Harrison 1990), as well as the more recent spectre of climate change (Baker et al. 2006). Oil can also be a significant threat to seabirds in many marine areas (Croxall 1977). Given the recent major oil spill resulting from the Deepwater Horizon disaster in the Gulf of Mexico, it seemed appropriate to review oil spills in Hawaiian waters, to examine how prepared Hawai'i is for a major spill, and outline ways to improve the state's readiness should a spill occur.

Reported oil spills have been less frequent in Hawaiian waters than in many more temperate areas. Reasons may include the archipelago's relatively light marine traffic and lack of navigation hazards compared to the rest of the world. However, even in these waters, tankers can get into trouble. The *Exxon Houston* (490,000 barrels: one barrel equals 42 gallons) and *Star Connecticut* (250,604 barrels) somehow ran aground off of Oahu in well-charted and lighted waters (Washington Post: 4 March 1989; 8 November 1990), fortunately with only minor spills.

Historically, the most significant spills were those associated with the 1941 Pearl Harbor attack. The sunken *U.S.S. Arizona* remains a major future pollution hazard as its hull continues to corrode (Lenihan 1989), as do other sunken World War II era vessels off both the main and northwestern islands. Although data on recent oil spills are often difficult to obtain (Pfund 1992), on average 100 spills of more than a few gallons are reported annually in Hawai'i (Morgan 2006), and there have been 13 discharges larger than 238 barrels (10,000 gallons) between 1982 and 1997 (U.S. Coast Guard 2006).

Not counting World War II, at least two major spills have occurred in Hawaiian waters. In the Northwestern Hawaiian Islands, the *Irene's Challenge* was lost 80 km north of Lisianski in 1977 with 238,000 barrels of crude oil (approximately equally to the *Exxon Valdez* oil spill in Alaska); and the *Hawaiian Patriot* with 715,000 barrels (approximately 3x the *Exxon Valdez* oil spill) was lost south of Necker Island, also in 1977 (Steiner and Townsend 1997). The spill from the *Irene's Challenge* at one point covered an area of 32 x 8 km (Demarest and Elliott 1997), although no oiled birds were ever reported from the disaster. Finally, the *Omni Yukon* exploded in 1986

southeast of Midway, just three days after unloading 550,000 barrels at Oahu (Steiner and Townsend 1997).

The number of oiled seabirds reported after spills in Hawaii are minor compared to those from temperate waters. Of note for seabirds, however, have been the T/B *Hana* spill which discharged 1,000 barrels of Bunker C, fouling windward Oahu in 1987 and resulted in 15 birds oiled of which 4 died (U.S. Coast Guard 1987) and the *Tesoro* spill in 1998 of 119 barrels of Bunker C off Barber's Point resulting in 34 birds oiled and found alive and 20 dead (Elliott 2006). Flint and Elliott (1997) report an additional 246 oiled seabirds from 51 'mystery spills' in the Northwestern Hawaiian Islands. In all, fourteen species of seabirds have been reported oiled in the Hawaiian archipelago (Demarest and Elliott 1997).

The small number of seabirds reported killed per spill results in part because, compared to temperate species, Hawaiian birds do not spend much time on the water (Ainley 1977), which reduces their exposure to oil. Many Hawaiian seabirds also only return to land to breed, often in very remote areas, do not have nest sites where they can be easily observed, or dead birds wash up on inaccessible shorelines. Thus measuring the effects of oil spills on birds is difficult (Demarest and Elliott 1997; Ford 1999). The spills of the *Irene's Challenge* and *Hawaiian Patriot* off the Northwestern Hawaiian Islands may have killed tens of thousands of seabirds, but there was no one there to count them.

Prevention

The spill of the *Exxon Valdez* in 1989 in Alaska galvanized public opinion, leading to the Oil Pollution Act of 1990. The act made the vessel owner/operator responsible for the costs of the spill and restoring damaged resources; required contingency planning; equipment to allow facilities, locations and individual vessels to respond to a worst case scenario; and states to impose their own liabilities (e.g. Hawai'i Superfund Law, 1991). The International Convention for the Prevention of Pollution from Ships (MARPOL) set standards for tankers.

Oil tankers and their operations in U.S. waters are now probably much safer than they were a decade ago. Single hull tankers will be phased out by 2015 and replaced by double hulls, although the value of these has been questioned, as has the future availability of double hulled tankers (Toronto Globe and Mail July 20, 2000). Good seamanship remains the best

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line of defense for preventing spills from tankers. With these safeguards, the greatest risk of spills now probably comes from “foreign-flagged non-oil-carrying vessels” which have less oversight than tankers, but still carry considerable amounts of mixed petroleum products (Helm et al. 2006).

The passages between the main islands are potentially hazardous because of rough seas and strong currents. The Kaiwi Channel between Oahu and Molokai is especially dangerous, at least in terms of the economic damages that would result from any spill, because its currents set toward Oahu (Pfund 1992). To reduce the risk of oil spills, the Coast Guard petitioned the International Maritime Organization (Marpol) in the 1990’s to close all channels in the main islands to tanker traffic, except for the wide channel between Oahu and Kauai. This was not successful, although since 1993, using the Oahu-Kauai channel has been a voluntary practice adopted by the shipping industry (Hoffman 1999).

In 2008 Marpol declared the Papahānaumokuākea Marine National Monument a “Particularly Sensitive Sea Area” (PSSA), and outlined four voluntary “Areas To Be Avoided” (ATBA) as well as a reporting system for all vessels transiting the Monument. Within the Monument, there are three routes through which ships can pass: 1. between Pearl and Hermes Atoll and Lisianski Island; 2. between Maro Reef and Gardner Pinnacles; and 3. between Necker and Nihoa islands (Federal Register 2008).

Spill Response

According to federal law, when a spill occurs in Hawaiian waters, the Responsible Party (the polluter), the Coast Guard and the State of Hawai‘i Department of Health are jointly responsible for the response. Two local industry cooperatives, the Clean Islands Council and Marine Spill Response Corporation, provide oil containment and cleanup equipment in the Main Islands thereby reducing liability through a rapid and organized response (<http://www.msrmc.org/>). Response to large spills, however, is effectively a governmental responsibility because the Oil Pollution Act sets limits on liability at \$75 million (Helm et al. 2006). Thus all but the largest corporations

will not be able or willing to cover what could be billion dollar liabilities. The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and State of Hawai‘i Department of Land and Natural Resources are NOT lead agencies during a spill, so it is inevitable that protection of natural resources will take a back seat to the physical oil cleanup.

While the federal government does have some equipment pre-positioned on Midway (E. Flint pers. comm.), Shallenberger (2006) considered the Northwestern Hawaiian Islands “not well prepared to mitigate wildlife impacts at a large spill event, particularly . . . at any of the uninhabited islands and atolls”. Pfund (1992) suggested that the government has little incentive to maintain the standing infrastructure to respond rapidly to rare but massive oil spills, unless strongly supported by the public.

The *Tesoro* spill in 1998 demonstrated the need for a facility in the islands dedicated to the cleaning of oiled birds (Elliott 2006). The Hawai‘i Wildlife Center on Hawai‘i Island will provide such a base (Morgan 2006); however, it is still being built and is not yet fully funded. Further, there is no group of trained first responders that are critical in the first hours and days of a spill. In the event of a spill, trained personnel will have to be flown in or local volunteers trained. The Clean Islands Council has a “containerized mobile stabilization unit stationed in Oahu that could be moved to the site of a spill to treat as many as 10 brown boobies” (Hawai‘i Area Contingency Plan), a response capacity that would be overwhelmed in the event of a major spill.

The Trustees, the State and Federal agencies responsible for the natural resources damaged by the spill, can file for the costs to rehabilitate the resources, and these would be paid by the insurance of the polluting ‘responsible party’ or by the federal government if the party is underinsured or unknown. Documenting damage is thus key. Dead, oiled birds on beaches are the ‘gold standard’ of damage; but if much of the damage to Hawai‘i’s birds occurs at sea, agencies have to send ships and aircraft to look for oiled birds. They also have to rely on sophisticated models of carcass survival and drift based on current, weather and biology (e.g. Ford 1999); otherwise, resource damage will be grossly under-estimated.

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Even though shipping in the islands is light compared to many other seaways, it is not insignificant. Seven hundred tankers carry over 6 million barrels of petroleum into Hawai'i annually (Morgan 2006). More than 18,000 marine vessels are annually active in Hawaiian waters, including 900 foreign vessels; at any one time 180 vessels can be found in Hawaiian waters carrying 50-70,000 barrels of fuel oil (U.S. Coast Guard, Honolulu). All these could generate spills from groundings or collisions at sea. Other potential sources of spills are pipeline breaks, runoff from onshore dumping, and aircraft accidents.

Response planning and response around harbors appears excellent in Hawai'i, but remain questionable at a larger scale. Steiner and Townsend (1997) and G. Ford (pers. comm.) both noted that past oil spill responses in Hawai'i tended to suffer from a lack of coordination and communication. It is unclear whether the future will be different for bigger spills or those away from harbors. The Papahānaumokuākea Marine National Monument is managed jointly by one state and two federal agencies, none of which are lead agencies for oil response. Thus, a rapid and coordinated response during a major spill would probably be difficult to achieve. Concentrations of nesting birds on distant, isolated islands, multiple jurisdictions, and inadequately pre-positioned resources are indicative of the preconditions for a disaster.

In a worst case scenario, a foreign-flagged tanker heading from Latin America to China, or a tramp steamer carrying petroleum products would come to grief in one of the transit gaps through the Northwestern Hawaiian Islands, generating a spill in The Papahānaumokuākea Marine National Monument. In summer, when several hundred thousand albatrosses are fledging and tens of thousands of green turtles hatchlings make their way to the sea, the spill could be especially devastating. Outer reefs would be covered in oil with no technology to clean them. The world press would find itself covering another *Exxon Valdez* or Gulf of Mexico oil spill as agencies scrambled to coordinate and to get resources to the scene. If the oil did not come ashore or the spill occurred in midwinter when many of the islands lack human staff, the damage might never be known, as turtles, dolphins, albatrosses and whales died far out at sea. By spring, the only evidence of damage might be a few carcasses washed up on beaches and depressed population counts of nesting birds and turtles in the coming years.

To improve response, we need to preposition a significant amount of response equipment, as Alaska now does in Prince William Sound, in the Northwestern Islands. This would require a substantial investment that might not pay off for years, then one day the investment would become priceless. We also need to initiate practice drills in the same islands, to understand the issues of logistics and communication that would follow from an oil spill. We need The Hawai'i Wildlife Center up and running both for its response capabilities and so it can train responders. Finally, we need to learn from past oilings of reefs and develop response protocols based on this experience. We might also even think about small experimental oil spills and clean ups, so we don't have to learn in the middle of actual spills. All this will involve foresight and planning, whereas too often we have preferred to wait until a disaster is upon us.

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Stealing with Tools

By Ron Walker

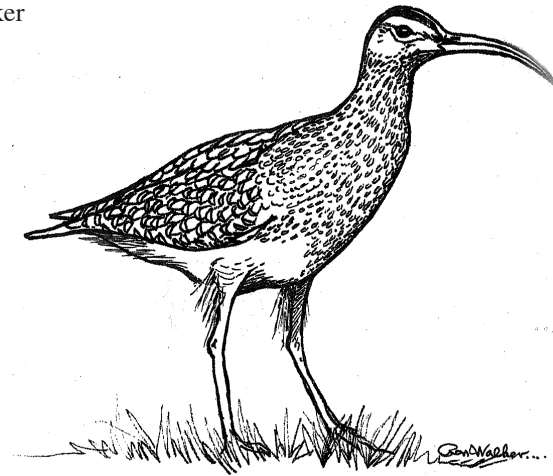
**“Ku’u wahi manu e hai e mai ana e makaukau e lawe I ke’o:
My bird that declares beforehand be ready to take some
food. Answer: the *stiltsbird*” (curlew) sounds like: Take some
food, take some food.” (Judd, 1930)**

The Bristle-thighed Curlew was given the scientific name, *Numenius tahitiensis*; *Numenius* for its’ curved bill (Latin for “like a crescent moon”) and *tahitiensis* for Tahiti where it was first described by scientists. The Hawaiian name, *Kioea*, figuratively means “tall” referring to its’ long legs (Pukui, M.K. et al, 1986). In Hawaii, the season for this curlew is from September through April; they start leaving for the breeding areas in Alaska in early May, although some juveniles hang around during the summer months. The mating and nesting season extends from May through August in Alaska. In late August and early September they start congregating along the coast and leave for the wintering areas in the Pacific.

This remarkable shorebird has several unique characteristics: it is the only shorebird whose entire wintering range is on islands of the Pacific; the only one to use tools to break open eggs; and the only shorebird to remain flightless during the molting period. In migration, it makes a non-stop flight of 6000 KM twice a year making it, along with the Bar-tailed Godwit (*Limosa lapponica*), one of the longest nonstop flights known for any bird (Marks et al, 2009). Along with the Whimbrel (*Numenius phaeopus*), it is the largest member of the sandpiper family (*Scolopacidae*) to be seen in the Pacific basin (Pyle, 2002).

Although noted in the journals of seaman, scientists and birders as far back as Captain Cook in 1785, the nesting grounds were not found until 1948 when the Dr. Arthur Allen expedition discovered a nest with 4 eggs in the Yukon River basin of Alaska (Wetmore, 1965). In the 1880s, early explorers in Hawaii found them on the islands of Oahu, Moloka’i, Kaua’i, Ni’ihau, Hawai’i and Maui (Wilson and Evans, 1899). G.C. Munro in 1944 said he only heard a curlew call once on the Island of Lanai (Munro, 1944). Expeditions in 1911 and 1912 to the Northwest Hawaiian Islands (NWHI) reported them on both Midway Islands and Laysan (Bailey, 1949). It has been estimated that the NWHI support about 800 birds or about 8 percent of the estimated world population of 10,000 birds (Engilis Jr. et al, 2004).

Bristle-thighed Curlews breed primarily in two distinct areas of Western Alaska: (1) East of the Yukon River Delta and (2) the Seward Peninsula (Alaska Science Center, 2009). Specific areas include the Kenai Peninsula, Townsend, Kowak River, Askinuk Mountains, Kuskokwim River Valleys, Kotzebue Sound, Kobuk River, Lopp Lagoon and Mint River (Bent, A.C. 1927; Gabrielson et al, 1959). Summers, many birder groups center in Nome, Alaska and strike out East into the interior uplands seeking to add this rare bird to their life lists, often with poor success (personal experience, May 27- June 8, 2005). They need but visit Hawaii to readily find them.



During the winter in the Pacific, they visit the Pitcairn, Marquesas, Society Phoenix, Cook, Tuamotu, Caroline, Mariana and Marshall Islands as well as Palmyra, Fanning, Vincennes, Fiji, Tonga and Samoa (Alaska Science Center, 2009; Bent, op cit; Engilis Jr. et al, op cit; Gabrielson et al, op cit; Hayman et al, 1986; Del Hoyo, 1996). There are rare records of vagrant Bristle-thighed curlews seen in Japan, Bonin Island, Norfolk Island, Kermadec Island, Washington State and Vancouver, British Columbia (Hayman et al, op cit; Mlodinow, S.G. et al, 1998). They occur in Hawaii either as birds of passage or over-winterers (mostly juveniles) and have been recorded at the James Campbell National Wildlife Refuge (JCNWR) on Oahu all months of the year except March, May and June (U.S. Fish and Wildlife Service, 2010).

A review of all 69 volumes of the ‘Elepaio from 1939 through 2009 revealed a number of locations where this curlew has been seen in Hawaii and where, possibly, they may be seen again:

Island of Oahu

Kuapa Pond, Hawaii Kai
Mokapu, Marine Corps Station, Kaneohe
Kahuku, James Campbell National Wildlife Refuge
Paiko Lagoon, Hawaii Kai
Manana (“Rabbit”) Island
Waipio Peninsula, Ewa
Honolulu (downtown*)

Island of Hawaii

Hilo, Nakagawa Pond;
Hapuna Beach;
“North Kona”? ;
South Point, near canoe landing (Ka’alualu, Ka Lae).

Island of Molokai

Kualapu’u (reservoir);
Kaunakakai – Molokai Community College.

Island of Ni’ihau Lagoons and adjacent grasslands.

Northwestern Hawaiian Islands

Midway, Lisianski, Nihoa.

* Seen flying down Vineyard Blvd, August 11, 1987 by Andrew Engilis (‘Elepaio, Vol. 47, #4, April, 1987).

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Undoubtedly, the best place in Hawaii to observe the Bristle-thighed Curlew is in and around the James Campbell National Wildlife Refuge in Kahuku on Oahu. The maximum number recorded there between September, 1994 and December, 2009 was 51 (October 20, 2007) ; the minimum, 23 (August 16, 2006). They are seen in various portions of the refuge and adjacent areas, mostly around the edges of ponds, but also on roads, dikes, sand dunes and in ditches. They are easy to see on a visit to the refuge and relatively tame for photographic purposes. The major concentrations on the refuge occur between August and October (U.S. Fish and Wildlife Service, op cit; Silbernagle, M.D., 2010).

They exhibit expected behaviors including standing, walking, feeding, resting, flying, foraging, calling, perching, drinking, and probing. But one unusual feeding activity is referred to as “slamming” or “beating” which involves picking up a crayfish (Louisiana Crawfish, *Procambarus clarkia*), lifting it high, and dashing it downward on the ground to break the carapace and expose the inner flesh. They may also grab just one leg of the crayfish, whipping it from side to side to break it apart. At the JCNWR, they also slam invasive golden apple snails (*Pomacea caniculata*). The refuge biologist notes that, on some occasions, they carry the snails to electrical pull boxes and slam them on the concrete tops to break them open (Silbernagle M.D. op

cit). So it might be said that they understand the concept of the anvil.

Staff at the City of Refuge National Historic Park at Honaunau, Kona, Island of Hawaii recorded a Bristle-thighed Curlew feeding on “bare pahoehoe by the big tide pool. It repeatedly threw its’ head back, then forward and downward. Closer observation showed it was dashing pipipi (*Nerita picea*) against the rocks, apparently to break the shells. Occasionally it appeared to dash a pipipi a second time “(Vaughn, 1970).

Given the length (70-110 mm/ 2,3/4 – 4,1/3 inches) and curvature of the bill, it is not surprising that they go after ghost crabs (*Ocypode pallidula*) on sandy beaches, penetrating the hole for a meal (I witnessed this on Lisianski Island in the NWHI in September, 1966). They have also been known to steal eggs from seabirds, including sooty terns, frigate birds, gray-backed terns, and boobies. They either impale them or carry them, endwise, away to a hard place to slam and break them open (Hall, 1960; Bent, op cit). But by far the most amazing ability of this species is in its’ use of tools. They have been seen lifting stones or pieces of coral and slamming it on an egg to create a hole and then inserting the bill to drink the contents. As far as is known, this is unique among shorebirds (Marks et al, 1992).

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The Bristle-thighed Curlew is not classified as a threatened or endangered species by the Federal or State governments. However it is considered rare and may be a candidate for such listing by the U.S. Fish and Wildlife Service (Del Hoyo, 1996). It is listed as a "Species of High Concern" in the U.S. Shorebird Conservation Plan (Brown, et. al, 2001), a "Bird of Conservation Concern" by the U.S. Fish and Wildlife Service (Engilis Jr. et al, op cit) ranked "Vulnerable" by the IUCN (Del Hoyo, op cit) a "Globally Rare Species" under the U.S. Pacific Islands Regional Shorebird Conservation Plan and as a "Globally Threatened Species in Need of Regional Action" by the South Pacific Regional Environmental Programme (SPREP) (Engilis Jr. et al op cit). The concern is for mortality on the wintering grounds during the moult when the species is vulnerable to predators and on the breeding grounds to off-road vehicles, arctic skuas (*Stercorarius parasiticus*), ravens (*Corvus corax*), and arctic foxes (*Alopex lagopus*) (Del Hoyo, 1996).

Essential conservation actions include maintaining habitats and controlling predators and human interference in both the breeding and wintering areas (Engilis Jr. et al, op cit).

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Upcoming Lecture

Monday August 16th
6:30 pm at Ing Direct Café
Rick Barbosa of Hui Ku Maoli Ola
"Successful Attempts to Restore Native Habitat"
a review of different ecotype restorations
by Hui Ku Maoli Ola from wetlands to dryforests.

Please contact the HAS office with any questions
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Calling all Birders

I have been receiving many calls from visiting birders that would like to meet up with local birders to go out birding for a day while they are visiting. If you are willing to take out visitors please contact Casey at 528-1432 or by email at hiaudsoc@pixi.com. Please let me know what days are best for you as well as what island you are on and the best way to contact you!

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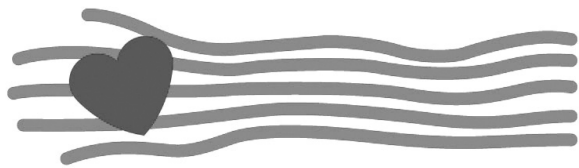
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give aloha

Foodland's Annual Community Matching Gifts Program

Remember to Shop Foodland and to Give Aloha to your favorite organization "Hawai'i Audubon Society"

Shop September 1st through October and any donation made to HAS will be matched! Mahalo and Aloha and See you shopping at Foodland!

Additional References

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Field Trips

Saturday August 21, 2010

Tour a Solar powered house and learn how easy it is to go Solar!

12 to 2 pm please call Casey at 528-1432 to sign up and for directions you can also email to sign up at hiaudsoc@pixi.com

Saturday September 4, 2010

Welcome back Shorebirds

Low tide walk at Paiko Lagoon

6am please call Alice at 864 -8122 to sign up.

Elepaio Submissions

We are currently accepting submissions for the Elepaio Please send in your scientific articles, short stories, poems, and photos. Email submissions to hiaudsoc@pixi.com

Save the Date

Hawai'i Audubon Society Annual Awards Banquet and Silent Auction

Monday October 18, 2010
Treetops Restaurant in Manoa

Save the date for this great event we will be giving out awards to great members in the community as well as having our silent auction, and a wonderful dinner followed by a lecture! We look forward to seeing you and your friends there!

Donations for Silent Auction

We are accepting Donations for our Silent Auction. If you have any unique items or crafts that you would like to donate please call Casey at the HAS office 808-528-1432 or you can email her at hiaudsoc@pixi.com.

I look forward to some more great donations this year!



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‘ELEPAIO • 70:6 • AUGUST/SEPTEMBER 2010

Calendar of Events

Monday, August 16th

Hawai'i's Native Plants lecture

By Rick Barbosa of Hui Ku Maoli Ola

6:30 pm at ING Direct Café in Waikiki

Saturday August 21st

Tour a Solar Home and learn how you can go Solar too!

12 to 2 pm To sign up please call the HAS office at 528-1432

or email hiaudsoc@pixi.com

September 1st through October

Shop Foodland and Give Aloha

Saturday, September 4th

Welcome Back Shorebirds

Low Tide Walk at Paiko Lagoon

To sign up please call Alice 864-8122

October 1st

Grant application Deadline

Please visit hawaiiiaudubon.com for applications and requirements

Save the Date

Monday, October 18th

Annual Awards Banquet and Silent Auction

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