

## Turtles in Alaska

By Joshua Ream

Although no freshwater turtles occur naturally in Alaska, released pets are becoming a frequent occurrence in populated areas (Ream unpublished data). In 2013 alone, turtles (presumably red-eared sliders) were reported in Sand Lake and Goose Lake in Anchorage (Ream unpublished data). The individual found at Goose Lake by school children was originally thought dead as it was buried in mud at the side of the still ice-covered lake (Ream unpublished data). The turtle was dislodged, found to be alive, and transported to Anchorage Animal Control (Ream unpublished data). The assumption is that this turtle successfully overwintered at Goose Lake, a problematic scenario that could be the first step in the establishment of viable introduced populations. To our knowledge though, there is yet to be a viable population of freshwater turtles in Alaska.

There are four species of marine turtles that sometimes venture into the state's waters, including the Loggerhead Sea Turtle (*Caretta caretta*), the Green Sea Turtle (*Chelonia mydas*), the Olive-Ridley Sea Turtle (*Lepidochelys olivacea*) and the Leatherback Sea Turtle (*Dermochelys coriacea*). All four are listed as federally threatened or endangered under the Endangered Species Act (ESA), but occur in Alaska waters in non-breeding populations (MacDonald 2003). Hodge and Wing (2000) described an "Alaska Turtle Season" as July through October, with 75% of occurrences reported during this period (Hodge and Wing 2000). Their graph of seasonal distributions of occurrence is borrowed here as figure 6 of the appendix. Prior to 1993 most Alaska marine turtle sightings were of live Leatherback Sea Turtles, but since then, most observations have been of Green Sea Turtle carcasses (ADF&G 2008).

Bruce Wing at the Auke Bay Laboratory of the National Oceanic and Atmospheric Administration (NOAA) maintained a database of Sea Turtle observations in Alaska for several decades. These were derived from field notes, correspondence, newspaper articles and reporters, biologists and records from the Auke Bay Laboratory (Hodge and Wing 2000). After 47 years of federal service, Wing retired in 2011. Consequently, database updates have ceased and as of August 2013, all specimen collections of the laboratory have been transferred to UAM in Fairbanks. This collection included amphibian vouchers obtained by Robert Parker Hodge as well.

The records compiled by Wing as of 1998 were published in 2000 with coauthor Robert Parker Hodge in the Herpetological Review. Wing's records were combined with those of Hodge, the latter of which were derived from museum records, interviews, and "questionnaires distributed to fishermen, biologists and school teachers in Alaska coastal communities" (Hodge and Wing 2000). These combined data are included here as table 3 of the appendix.

Given the vast expanse of marine waters off of the state's coast, including over 54,246 km of largely uninhabited coastline, the Hodge and Wing (2000) data likely captured only a small percentage of turtles that actually occurred – those that were found dead on shore or observed by fishermen at sea. Hodge and Wing (2000) suggested that “most cold-killed, grounded turtles are probably destroyed by wave action (pounding on rocks), and scavengers before anyone finds the evidence. Consequently, all reported Alaska marine turtle occurrences are in clusters near centers of human population” (Hodge and Wing 2000). Later, Norman and Hassler (1995) reported that they were unable to locate a sea turtle, even after many hours in boats and planes observing the Alexander Archipelago and the coastal waters of southeast Alaska.

The North Pacific Drift may be partially to blame for turtles arriving in Alaska since this warm current moves east from the west Pacific and eventually it splits at the latitude of Vancouver Island, B.C., heading both north and south from there. Consequently, it is likely that turtles arriving in Alaska simply made a wrong turn, or got caught in a current that they couldn't easily get out of. Wing postulates that most turtles arrive to the state in late summer and fall and are then caught in the eastern portion of the Gulf of Alaska gyre (ADF&G 2011).

Unfortunately, many of the Sea Turtles that end up in Alaska waters eventually die due to the cold-water temperatures. They end up in the state by straying beyond their normal ranges and when the water temperatures drop in September and October, they become hypothermic and are not able to return to the warmer southerly waters (ADF&G 2011). Among the four known to occur in Alaska though, the Leatherback is considered large enough to be able to maintain higher body temperatures that permit survival and the return south (ADF&G 2011).

Some authors have suggested that marine turtle occurrences in the North Pacific are associated with warm-water years (MacDonald 2003). Hodge and Wing (2000) refute this claim. They reported that only 53% of Leatherback sightings in Alaska prior to 1998 occurred in warm-water years (Hodge and Wing 2000). Their compiled observations of Leatherbacks in the state included ten sightings in three warm-water years and nine sightings in four normal-water years, but no sightings in cool-water years (Hodge and Wing 2003). Likewise, “hard shell turtle occurrences (*Chelnoia*, *Caretta*, *Lepidochelys*) occurrences in Alaska do not reflect a warm-water year connection, with only 47% of occurrences in warm water years” (Hodge and Wing 2000). The graph of annual turtle occurrences by species provided in Hodge and Wing (2000) is included here as figure 7 of the appendix.

### *LEATHERBACK SEA TURTLES*

Leatherback Sea Turtles, listed as critically endangered under the ESA, were the most frequently reported Sea Turtles in Alaska prior to 1993, with at least 19 records occurring between 1960 and 1998 from Southeast Alaska to the Alaska Peninsula

(MacDonald 2003). They have also been reported at Cape Navarin, Russia, 450km northwest of Saint Mathew Island in the Bering Sea (MacDonald 2003). This species is primarily pelagic and seldom approach land except for nesting (MacDonald 2003). They forage in temperate waters and nest on beaches at tropical and subtropical latitudes (MacDonald 2003). They feed primarily on jellyfish, which are abundant in the Gulf of Alaska during late summer and fall (MacDonald 2003). They are considered uncommon in Alaska, but peak numbers have been reported in August in the 1970s and 1980s (MacDonald 2003).

### *GREEN SEA TURTLES*

The second most commonly reported Sea Turtle in Alaska at the time of MacDonald's 2003 publication titled "The amphibians and reptiles of Alaska: a field handbook" was the Green Sea Turtle, which has been reported at least nine times between 1960 and 1998 (MacDonald 2003). This may no longer be the case however, as it may have surpassed the Leatherback with 20 sightings as of 2011, including five live turtles (ADF&G 2011). It was the only species to be reported between 1994 and 1998 (MacDonald 2003). Beached carcasses and sightings of live individuals have occurred from the Alexander Archipelago north and west to near Cordova, and near Seldovia, and Homer in Kachemak Bay (MacDonald 2003). Eight of the nine sightings prior to 1998 occurred from September through November (MacDonald 2003).

Green Sea Turtles are listed as endangered under the ESA, they typically range throughout tropical portions of the Atlantic, Pacific, and Indian oceans, and they are commonly found in shallow waters with an abundance of sea grass and algae (preferred foods) except when migrating (MacDonald 2003). Sexual maturity takes 20 to 30 years (MacDonald 2003). The species can withstand water temperatures as low as 46°F (but prefer temperatures above 60°F) and usually become stressed and die in colder waters (SitNews 2007, Hutchison 2000). Bruce Wing (Hutchison 2000) offered that, "When it starts getting down to about 50 degrees Fahrenheit, they're in trouble, and anything below 50 degrees is usually lethal to them."

The only turtle that Wing knows for sure to have been alive when found in Alaska was a male member of this species located by deer hunters Jerry and Pat O'Brien on Montague Island in Prince William Sound on 9 October 1996 (Associated Press 1996, Hutchison 2000). This turtle was subsequently reported to biologists and weighed in at 170 pounds (Associated Press 1996). The hunters originally thought the turtle was dead but after hauling it into their boat's fish hold, it began to show signs of life (Associated Press 1996). It apparently hadn't eaten in months, was 130 pounds underweight, and within two weeks of death, according to Scott Eckert, a research biologist at the Hubbs SeaWorld Research Institute in San Diego (Associated Press 1996). This specimen was brought back to Cordova where volunteers at the fire department, with the assistance of biologist Kathy Hough of the Prince William Sound Science Center, helped to revive the animal by warming it very slowly to prevent a heart attack (Associated Press 1996).

The recovering animal was then shipped to San Diego for rehabilitation, released with a satellite tracking device, and later known to be 600 miles off the coast of northern California before the device battery failed (Hutchison 2000).

On 2 December 2007 Mary Hert, a resident of Gravina Island near Ketchikan, contacted the NOAA Office for Enforcement to report a green sea turtle (see figure 9 of the appendix) on the beach near her residence (SitNews 2007). Special Agent Drew Mathews recovered the dead turtle and later shipped it to Hawaii for a necropsy (SitNews 2007). Apparently, this is the third dead sea turtle identified near Ketchikan since 1997 (Sit News 2007). Another specimen of *C. midas* was identified dead at Kelp Bay on the east side of Baranof Island near Sitka by Chris and Chuck McGraw in December of 2000 (Hutchison 2000). The corpse was of a female, about 30 inches long and weighing 130 pounds (Hutchison 2000). These two turtles did not make the deadline to be included in the Hodge and Wing (2000) paper.

More recently, another resident of Ketchikan, Dennis Diamond, located a dead Green Sea Turtle (see figures 10-12 in the appendix) approximately 10 miles northwest of the city at Bond Bay while fishing for winter kings on 3 December 2010 (ADF&G 2011). A squawking Steller's Jay alerted him to the turtle's location and he then found the specimen. Though dead, it was completely intact and so heavy that Diamond could barely pull it above the tideline (ADF&G 2011). He then checked the water temperature finding it to be 41-42°F (ADF&G 2011).

After returning to Ketchikan and calling the Alaska Department of Fish and Game (ADF&G), Diamond returned to the site the next day to collect the individual and noted that "there were a couple of eagles sitting there. The eyes had been pecked out, and the scavengers had begun pecking into the body cavity, but it was still in very good condition." A necropsy determined that the cause of death was bronchial obstruction and lung collapse (ADF&G 2011). There were two types of plastic bags and a wad of microfilament fishing line in the stomach (ADF&G 2011). The digestive tract had become infected and inflamed, but the animal was also likely freezing to death (ADF&G 2011). The ADF&G Veterinarian who performed the necropsy in Fairbanks, Kimberly Beckman, noted that "It was a lot of plastic, the irritation was considerable in the stomach and partial obstruction likely affected the turtle's foraging behavior and ability to properly digest" (ADF&G 2011). The turtle was determined to be a female weighing 171 pounds and spanning approximately three feet in length (ADF&G 2011).

### *OLIVE-RIDLEY SEA TURTLES*

Olive-Ridley Sea Turtles, listed as threatened under the ESA, are the most abundant marine turtle in the world in terms of absolute numbers, they are found primarily in the warmer regions of the Pacific and Indian Oceans, and less frequently in the Atlantic Ocean (MacDonald 2003). Pacific populations nest from Mexico south to at least Columbia, but non-breeding individuals can be found in slightly cooler waters at higher

latitudes (MacDonald 2003). Non-breeding populations can range well out to sea, but they typically seek shallow water in bays and lagoons to breed and forage (MacDonald 2003).

This species has been documented in southeastern Alaska three times, including a carcass found near Yakutat in January 1986 and another south of Ketchikan in June 1991 (MacDonald 2003, Steiner and Walder 2005, Hodge and Wing 2000). The possibility exists that the turtles died elsewhere or were injured and carried out of their normal range before being observed in more northerly climates (Steiner and Walder 2005).

#### *LOGGERHEAD SEA TURTLE*

The Loggerhead Sea Turtle, listed as threatened under the ESA, has also only been reported in Alaska twice – a carcass was found on Shuyak Island north of Kodiak and another individual that was sighted near Cape Georgena on Kruzof Island northwest of Sitka in July of 1993. They typically inhabit warmer regions in the Pacific, Atlantic and Indian Oceans as well as the Mediterranean and Caribbean seas (MacDonald 2003). They sometimes move into temperate zones in the summer and their diet consists of crabs, mollusks, sponges, jellyfish, fish, eelgrass and seaweed (MacDonald 2003). They can take up to 30 years to reach sexual maturity (MacDonald 2003).

The Shuyak specimen was found at the water's edge in a deep inlet on the north end of the island (58°33.9'N 152°32.2'W) on 31 December 1991 (Bane 1992). The 37.8kg juvenile female was towed to a residence on the island and later transported to Kodiak by plane where it was transferred to the National Marine Fisheries Service and later to Kodiak College (Bane 1992).

There is no question that Sea Turtles occur in Alaska albeit usually to their detriment. It is not known how migratory patterns will shift with climate change and whether the rate of occurrence will change in light of this. It is also unknown what the true occurrence rate is, corrected for those that go unobserved. Given that these species are threatened and endangered, it will be important to monitor their occurrence in Alaska if we are to determine the impact that cold-water mortality is having on the populations. To this end, a centralized long-term database should be established, maintained, and publicized to continue to build on this knowledge. It may be beneficial too, to establish protocols to capture, relocate and rehabilitate individuals for sea turtle species other than the cold tolerant Leatherbacks.

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