THE IKKATSU PROJECT

SOUTH KUIU CLEANUP 2019

OVERVIEW

The issue of marine debris has been the focus of the Ikkatsu Project since it formed in 2012. By surveying beaches, actually counting the debris that is found and then cleaning it up, it's possible to get a better understanding of how marine debris affects each shoreline it touches. By sampling the water and checking it for microplastics, we are able to track the way that plastic moves through the water and what implications that may have for all of us.

Every year, approximately 8 million tons of plastic enters the ocean. While larger pieces may break into smaller ones in the water and on the beaches, that plastic never completely breaks down. Individual pieces of plastic are rendered microscopic, but they are not gone. The negative effects of this growing plastic load in the oceans – on all kinds of sea life, from plankton to whales, and even the people who depend on seafood in their diets – are beginning to be better understood.

Cape Decision, on the southern tip of Kuiu Island, is one of the most remote locations in southeast Alaska, about 100 miles west of Wrangell and 100 miles south of Sitka. The beaches on the west side of the peninsula are exposed to the full force of the Pacific while the coves and inlets to the east are more protected. The waters teem with life, with whales and otter coming in close to shore and colonies of sea lions gathering on offshore rocks between meals of silvery salmon. The kelp forests provide food and shelter for a variety of aquatic species, a vast web of life that dips in and out of the rugged shoreline.

Decision Pass is a busy stretch of water, not only for whales and sea lions, but also for cruise ships and fishing vessels. The waterway is one of the main conduits between the Inside Passage and the Gulf of Alaska and while it is quite common to see a vessel moving through one way or the other, Cape Decision itself is not an easy place to access. The area is prone to high winds and often inclement weather that makes dependable travel to and from the Cape, as well as between certain points on south Kuiu, virtually impossible. Beaches are rocky and when hit with large swells, landing and launching in small craft can be a risky proposition. As with other projects in Alaska, flexibility is key to success.

In 2018, the initial South Kuiu Cleanup surveyed and cleaned beaches in the area, generating important baseline data while removing 2,625 pounds of debris. This year's effort was organized around returning to some of these beaches to gather follow-up data as well as looking to other nearby shorelines that were not part of the first year's study.

As was the case with the 2018 program, the main objectives of this year's efforts were to conduct debris surveys on several remote wilderness beaches near the south end of Kuiu Island, collect water samples for microplastics screening and clean accumulated debris from target beaches. Survey results will be shared to the national NOAA database and will be available for use by research partners. Water samples will be processed using established procedures in conjunction with the University of Puget Sound; results will be added to the existing baseline records for the area, and will be used as comparison points with future samples.

Finally, one of the main objectives for the 2018 survey was to establish one beach to be used as an ongoing deposition study location. Special effort was taken to ensure complete debris removal, to the point that it was virtually cleared of all debris. When surveys and cleanup were done again in 2019, the results began to show some of how debris travels and the rate at which it builds up on shore, as well as the specific types of debris that have arrived in the intervening time.

PERSONNEL

The surveys and cleanup efforts involved volunteers as well as lighthouse personnel and staff. A total of eighteen individuals worked on some aspect of the program, over a three-week period from July 5th – 30th, 2019.

PROTOCOL

For purposes of debris counting, the NOAA Standing Stock Survey protocol has been the most common method used by the Ikkatsu Project. Because this method is constructed for beaches of 100 meters or more in overall length, some modification was necessary on several of the smaller beaches that were

studied. (Comma Cove and Wolf Track Beach were surveyed this year using different parameters that, while giving an accurate representation of the debris that was found, do not correspond directly with the way the Standing Stock Survey is laid out.)

Water sampling was conducted using methods adapted from EPA grab sampling protocols and involved collection in stainless steel 1-liter sample bottles for later analysis.

FIELD SITES

Given the amount of logs lining the high-water mark of all of these beaches and the way they are deposited in shifting piles, often many layers deep, it can be difficult to determine exactly how much debris remains after cleanup operations are completed. All efforts were made to get to beach level and where debris was spotted, it was retrieved, even under the logjams.

The Landing, Lighthouse Beaches and Comma Cove were all accessed on foot. Other locations were accessed by sea kayak.

The Landing

Located approximately a half-mile northeast of the lighthouse, the Landing was chosen as the beach for the multi-year deposition study because of its accessibility in all weather conditions and its clearly defined boundaries. Although there are a considerable number of drift logs at the top of the rocky cove, it was possible to work around them with more success than at other locations. Also, because this beach is accessed more frequently than the others in the program, it will be easier to monitor over time.

As was done in 2018, the Landing was an initial focus of this year's work, with volunteers cleaning the beach on three separate, extended occasions, ensuring that it was completely clean again by the time we left.

Comma Cove

A semi-circular cove on the western side of the island with four main separate and distinct beaches. The 2018 deposition pattern resulted in a noticeable difference in debris concentration, with the southern and central sections appearing to be more heavily littered than those to the north. With the 2019 survey, attention was focused on the north side, while cleanup efforts took place on all the same beaches in the cove that were visited the year before.

Lighthouse Inlets

In 2018, three of the small slot beaches around the lighthouse were examined and 150 pounds of debris was removed. For this year, three additional beaches were added, with each distinct beach seen as a single survey area. All of these beaches are more exposed to the incoming swells than those found further to the east but because of their narrow openings, logs were less of an issue here. With a few exceptions, items on these beaches were relatively easy to locate and remove, and by doubling the number of areas surveyed near the lighthouse, we were able to target water-borne debris as well as remains of items that remain from the Coast Guard era.

Wolf Track Beach

Wolf Track Beach is located about 4 miles north of the lighthouse. At the entrance to Port McArthur and well protected from most gales, this and other similar spots along the east side of Affleck Canal are quieter and lend

themselves to easy access from sea kayaks. There are two main sections of beach at Wolf Track, sandy spans mixed with rocky outcrops along the shore with trees and underbrush forming a line just above the high-tide mark. As is the case in other locations, it is in these thickets and tangles where most of the debris was found.

Marble Islets

Five miles further up from Wolf Track Beach, on the same side of Affleck Canal, the Marble Islets stand at a point where the main coast of Kuiu Island tapers off in a sweeping arc both west and north. Just to the side of the islets themselves is another sandy beach, with an ideal all-weather camping area nearby. Similar topography to Wolf Track Beach meant that much of what was surveyed here was also found in the fringe of the woods above the high-tide line.

Howard Cove

Most of the shoreline around South Kuiu Island is rocky and can be difficult to access. Although there are some sandy spots farther up Affleck Canal, Howard Cove, about 4 miles north and west of the lighthouse, is an anomaly for that side of the island. A mile-long strand of golden sand, backed by low-rising terrain and home to many black bears (seriously, many black bears), this west-facing beach is open to the north Pacific and debris is immediately visible all along its reach. There is a string of rocks and islets that cuts across part of the cove entrance and at low tide, they can deflect most of the waves that reach the beach. At high water, however, the area surveyed is subject to the full force of the open water.

RESULTS

Standing Stock surveys at each of the locations yielded varying degrees of debris, with the outer coast beaches of Comma Cove and Howard Cove being more affected than those on the protected east side of the peninsula. There were significant amounts pulled off the beaches at the lighthouse itself, with several large foam floats and buoys removed, along with numerous pieces of fishing gear and a plethora of plastic bottles. (Individual survey forms for each survey conducted are included in the Appendix.)

As was the case in 2018, six water samples were collected. Some were taken from the same locations as last year and it is hoped that each successive year will include a mix of established collection points and new ones. (Although it takes some time for complete results to be listed, the first round of analysis has been completed and those results are also included in the Appendix.)

A total of 1452 pounds of debris, most of it plastic, was removed from beaches that were surveyed. The lower overall number, compared to 2018, reflects the fact that several of these same beaches were cleaned just one year earlier. Over five hundred pounds of this year's total was transported to Wrangell for disposal. (All of the debris collected at lighthouse beaches was taken to Wrangell, along with smaller amounts from Howard Cove, Marble Islets and the Landing. The remaining debris was collected and placed in supersacks, in areas above the beach and past the high tide mark and storm surge zone. These caches are targeted to be removed in the 2020 cleanup as part of a larger transport operation.)

- This year's survey saw a marked decrease in the amount of debris at the Landing. Because this beach had received special attention in 2018, the 38.5 pounds of debris that was collected can be considered the one-year accumulation for this location. There were fewer items of fishing equipment than 2018, but an increase in plastic bottles and jugs.

- Debris collected from Comma Cove beaches was concentrated in three existing sites in the woods above the high tide line for removal in 2020. Some of the debris collected in 2018 is still at these locations awaiting transportation. Follow-up surveys were done on the northernmost beach of the four that were examined last year and 245.5 pounds was collected off of all the beaches combined. (4th Beach-93, 3rd Beach-101, 2nd Beach-20, 1st Beach-31)

- The individual slots in the rock that surround the lighthouse are narrow fingers of water with pocket beaches at the top, heavy forest rising quickly above. All of this year's debris collected from lighthouse beaches was bagged and transported to Wrangell for disposal. The total weight of debris removed was 361 pounds, taken from a combination of beaches, some that were cleaned in 2018 and others that were not.

  As was the case at the Landing, debris found this year on beaches that had been addressed in 2018 tended to contain a higher percentage of plastic bottles and foam than items related to the fishing industry. One large foam buoy was found east of the lighthouse, however, and along with two others to the west and the numerous large chunks scattered around, it seems obvious that there were more here at one time.

Six distinct beaches were included in the collection totals. From east to west:

- East Beach 88 lbs.
- Gut 157 lbs.
- Light Finger 47 lbs.
- 1st Beach 22 lbs.
- 2nd Beach 14 lbs.
- 3rd Beach 33 lbs.

- Debris at Wolf Track Beach consisted of the larger items that were marked and left last year: pier bumper, barrels, etc. (As of this time, we don't have the equipment needed to removed these outsized items, nor any practical way to transport them. A resolution to the problem, involving on-site processing, is currently being reviewed.) The bulk of the items found were located as much as 20 meters above the high tide line, well into the forest and mixed in with the thick underbrush. 85 pounds was collected, most of which was cached with what remained from last year, for removal in 2020.

- Most of the debris collected at the Marble Islets site was also found at or above the high tide line, often 10-20 meters back in the forest. Fishing gear and plastic bottles dominated here and most of the 82 pounds collected remains in a supersack in the woods, awaiting removal next summer.

- Two separate surveys were done at Howard Cove, both of them on the main sweeping expanse of beach that dominates the location. A mix of items was present, with a wider variety than found on most of the other beaches and there were several larger items that we could not move, given the equipment we had. We did manage to cache 318 pounds at a central location for removal next year.

A side-by-side comparison of debris weight totals demonstrates the effects of cleaning over two consecutive summers:

Location	2018	2019
Landing	450	38.5
Comma Cove	1750	245.5
Lighthouse Beaches	150	361
Wolf Track Beach	275	85
Marble Islets	X	82
Howard Cove	X	318

The increase in weight removed from the Lighthouse beaches is due to the expanded efforts there in 2019. All other beaches that can be compared show a significant decline in overall weights and while only the Landing had been designated as a deposition study area, it is clear that the same effects were being felt at the other locations.

NEXT STEPS

The logistics for 2020 are already well underway. Following the results of this year's efforts, we will be designating a second deposition beach study area (in addition to the Landing), this time at one of the locations within Comma Cove.

By having a second set of data points coming from the other side of the island, we should get a much clearer view of the overall rate at which this debris is coming ashore.

One of the main observations this year, especially on beaches that had been cleaned the year before, is that there was

considerably less fishing gear than was found in 2018. The numbers of consumer plastics (bottles, jugs, jars, etc.), however, increased across all locations. For now, the working hypothesis is that fishing gear, because it is designed to last in tough marine environments, endures on beaches long after consumer plastics have broken into smaller pieces. This may give the impression that fishing gear is an outsized part of the marine debris problem, when the reality is that generations of plastic bottles likely are beached and torn apart over the same period of time. The data that will be collected this coming year will help to give a clearer view of this process, and will be a main part of the 2020 program.

Beyond the deposition studies, priority will be given to east side beaches farther up Affleck Canal. This year's explorations took us up as far as the Marble Islats; next year, we should be able to work our way up to Kell Bay and beyond. Now that the kayak fleet is up and ready to go, our ability to access the most intricate of these shorelines is in place.

Transport and disposal of collected debris will also be handled differently in 2020. Our efforts to include the Coast Guard in some of the more remote pickup locations have not been successful to this point, mostly because of timing constraints and communication difficulties. For that reason, we are planning on using a larger boat this summer that will anchor for up to a week in Port McArthur and serve as the central repository for all that we have collected so far, along with whatever we can get aboard from next year's cleanups. All debris will be transported back to Wrangell, where it will be sorted and disposed of. Other contingency plans are being developed as well, with the goal of leaving behind as little as possible.

Training of volunteers will be a priority for next year's program, ensuring that the data being collected is usable and consistent. Training criteria has been

established and lessons are being developed that will make the volunteer experience better and the data more reliable. In addition to paper-and-pencil surveys (which have been updated to match online forms), an expanded use of the NOAA app is planned for 2020.

Finally, “Decision,” a 26-minute film that is being put together with footage from the last two summers and sponsored by Werner Paddles, will be released in spring of 2020. The film will be screened at selected festivals and at paddlesport events around the country. In the fall, a short tour of southeast Alaska is being scheduled to help bring local communities into the process, not only getting involved in the annual surveys and cleanups, but also participating more in the continuing operation of the lighthouse itself.

The South Kuiu Cleanup is funded through a combination of individual donations and grants. Operating in Alaska is an expensive proposition; transportation expenses are high and supplies are all brought in by sea, making each individual item that much more costly. The Ikkatsu Project is committed to this region for the long term, and to the things that it has to teach us about the future of our world. At this time, funding is actively being sought for the 2020 effort.

CONCLUSION

The problems associated with marine plastics are turning out to have serious consequences for people as well as other life up and down the aquatic food chain. The fact that so much plastic is on these remote beaches illustrates the far-reaching nature of the situation. The debris removed from Cape Decision beaches is a small step in the direction we need to go to make our oceans healthier.

While the data provides critical information, and while it matters how it is interpreted and used, the most important outcome of this program is the connection that is made between people and wilderness. People protect what they know and love and it is important for us all to understand what is happening on these wild shorelines and how our own behaviors and habits have an impact. From the volunteers who are out there digging through the driftwood to the folks who see it happening on-screen somewhere, we all need to make that connection in our own way. Working consistently toward that point is one of the Ikkatsu Project's most important goals.

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