

Digging deeper in Clayoquot Sound: exploration of mudflat ecology

Submitted by Mark Spoljaric, researcher

Over the years the rugged West Coast of Vancouver Island has been gaining popularity with people from all around the world. The Pacific Rim area is renowned for vast expanses of pristine beaches, natural wild beauty, and a number of outdoor recreational activities including sea kayaking, surfing, hiking, and outstanding wildlife watching.

Many of these activities occur on the water around Clayoquot and Barkley Sounds or on the exposed sandy beaches of the West Coast. But one of the most beautiful and least visited of local spaces is the Tofino Mudflats on the east side of the Esowista Peninsula and on the southwest coast of Meares Island.

The Tofino Mudflats are a critical habitat for many different kinds of organisms whose survival depends on one another. The area epitomizes the Nuu-chah-nulth principle *Hishuk-ish ts'awalk* or "everything is one."

Algae and plants that grow on the mud provide food and cover for many species of small invertebrates (critters without a backbone, such as worms, shrimp and clams), which are in turn consumed by larger invertebrates such as crab, commercially important fish, numerous birds, small and even large mammals (including humans).

The area is one of the most important refueling stops for many species of migratory shorebirds on their way to and from the Arctic. As tourism and local population increase, more people will discover the magic of the mudflats. There is growing concern that increased recreational use could lead to unconstructive interactions between humans, their pets and wildlife.

In 1997 the Tofino Mudflats Wildlife Management Area (WMA) was established to protect the natural resources of the mudflats area. The management plan calls for stewardship and educational programs that will increase awareness in order to prevent activities that negatively affect the WMA.

In 2004 the Raincoast Education Society began regular educational activities to create enthusiasm for conserving the ecological integrity of the Tofino Mudflats Wildlife Management Area. And, over the past few years, the Clayoquot Field Station at the Tofino Botanical Gardens has conducted naturalist tours in which visitors explore a small portion of mudflats with the goal of making people conscious of the beauty and natural significance of the area.

In June 2007 the Marine and Aquatic Committee of the Clayoquot Biosphere Trust provided funding to conduct a pilot study to assess the potential impacts of recreation on invertebrates that inhabit the mud-

flats. I've been working closely with the Raincoast Education Society and the Tofino Botanical Gardens to conduct this study, which involves a comparison of the abundance of invertebrates that inhabit the mud between heavily disturbed, less disturbed and "pristine" (undisturbed) localities.

One of my hypotheses was that disturbed mudflat areas would have a lower biodiversity (number of different types of organisms and their abundance). I was also interested to see if one or two easily identifiable and countable organisms could be used as "indicator species" for biodiversity, making it possible to implement a simple and low-cost monitoring program for recreational impact across different

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areas of the mudflats.

During this study, I found a number of interesting organisms that live in the mud. The Pacific Neapolitan Lugworm has the appearance of its namesake ice cream with a green anterior (head area), red gills, orange mid body, and brownish tail. This worm burrows in the mud, but can be easily found by the presence of a coiled fecal casting on the surface of the mud.

The bloodworm or "Beakthrower" is a seemingly harmless worm that shoots out a round muscular proboscis with four fang-like jaws at the end. These worms use their proboscis to capture prey or as an anchor which helps them move through the mud.

Baltic Macoma clams are found throughout the northern hemisphere and are common in our mudflats here. These small clams have beautiful shell coloration (white to pink) and are often very abundant.

Ghost shrimp are pale white, soft-bodied small shrimp that make distinctive burrows in the mud. Male ghost shrimp can be identified because they have claws of markedly different size. These are an important food item for a wide range of organisms

from shorebirds to Gray whales.

The pilot study was conducted over July and August 2007 and has produced some interesting preliminary results.

More Baltic Macoma clams and ghost shrimp are found in the more heavily disturbed locality and more bloodworms found in the less disturbed locality, but biodiversity (the number of different types of organisms and their abundance) was highest in the undisturbed site.

At first glance, one might think more clams, shrimp, and bloodworms (the foodstuff of shorebirds) are good for the mudflats, but this is not necessarily the case. The Nuu-chah-nulth First Nations philosophy *Hishuk-ish ts'awalk* or "everything is one" is reflected in the early results. These species may be more abundant in the disturbed area because increased human presence has decreased the amount of time available to shorebirds and other organisms for foraging. Or, lower levels of biodiversity are often indicative of altered or degraded ecosystems, an explanation that fits the outcomes of this study.

The preliminary results of this pilot study highlight an important point: more research needs to be done in order to learn more about the mudflat ecosystem, which is even more important for understanding the ecosystems around Clayoquot Sound as a whole.

Until the impacts of recreational use can be firmly established, enjoy the natural beauty of the area, but be conscious and tread lightly in the delicate ecosystem of which you are a part.

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The Marine and Aquatic Committee of the Clayoquot Biosphere Trust provided funding for a pilot study to assess the potential impacts of recreation on invertebrates that inhabit the Tofino Mudflats. Mark Spoljaric is working with the Raincoast Education Society and the Tofino Botanical Gardens to conduct the study.



DISTRICT OF UCLUELET

NOTICE OF TAX SALE

Pursuant to the *Local Government Act*, Section 403, the following properties will be offered for sale by public auction in the Council Chambers of Ucluelet Municipal Hall, 200 Main Street, Ucluelet, BC, on **Monday September 24, 2007, at 10:00 a.m.**, unless the delinquent taxes, including interest, are paid before that time.

Folio No.	Legal Description	Civic Address	Upset Price
65.012	Lot 12, Plan VIS4490, DL281, Clayoquot Land District, PID #024-007-790	1056 Peninsula Rd	\$5,430.26
65.017	Lot 17, Plan VIS4490, DL281, Clayoquot Land District, PID #024-007-846	1078 Peninsula Rd	\$2,109.74
70180.152	#15 - 429 Orca Crescent, Whispering Pines Mobile Home Park		\$1,153.52
70180.211	#21 - 407 Orca Crescent, Whispering Pines Mobile Home Park		\$1,102.39
70180.401	#40 - 485 Orca Crescent, Whispering Pines Mobile Home Park		\$ 451.05
70180.420	#42 - 479 Orca Crescent, Whispering Pines Mobile Home Park		\$ 905.47
70180.452	#45 - 467 Orca Crescent, Whispering Pines Mobile Home Park		\$1,054.54

Tax Sale properties are subject to the Property Purchase Tax Act on the fair market value. The District of Ucluelet makes no representations about the properties subject to the tax sale. Potential purchasers are encouraged to familiarize themselves with the subject properties before the tax sale. The successful bidder must present the upset price by cash or certified cheque immediately upon being declared the purchaser, and the balance by 3:00 PM on the tax sale date.

Jeanette O'Connor, Collector

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For more information, you can contact Mark m.a.spoljaric@gmail.com or Josie Osborne at the Clayoquot Field Station, 725-1220 or josie@tbgf.org.

Watch the Tofino Botanical Gardens website for the full report of this study, available by October 2007.



Ghost shrimp are pale white, soft-bodied small shrimp that make distinctive burrows in the mud — one of many organisms making their home in the Tofino Mudflats.